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ABSTRACT

In order to assess the potential market for educational materials developed to teach the use of the computer as an instructional tool and as an aid to management and decision making, a mailed questionnaire was used to survey randomly selected college professors of educational and business administration, school district superintendents, and secondary school teachers. A sizeable, although not commercially profitable, user market was identified for both types of materials, with inservice training being identified as an area for market growth. The survey instruments and data tables are included in the report with questionnaire cover letters and selected responses appended. (STS)

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Comprehensive Analysis of the Market Survey for

COMPUTER APPLICATIONS PROJECT
PHASE I

Submitted to the

National Institute of Education

by the

Northwest Regional Educational Laboratory
710 SW Second Avenue/Lindsay Building
Portland, Oregon 97204

September 30, 1976

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I. THE COMPUTER TECHNOLOGY PROGRAM REVIEW AND EXPECTED OUTCOMES

The Computer Technology Program at the Northwest Regional Educational Laboratory has as a portion of its overall objectives the development of two different sets of instructional materials, each designed to meet the computer application and/or training needs of a multiple number of different educational audiences. These two sets of materials are identified as Data Management and Decision Making and Selecting and Specifying Computer-Enhanced Units. A brief review of each follows.

Data Management and Decision Making

The objective of Data Management and Decision Making is to teach practicing and potential educational administrators about the uses of operations research in educational administration.

This set of instructional materials is designed to consist of five books or units:

- Operations Research in Education
- PERT/CPM: A Planning and Analysis Tool
- Linear Programming
- Queueing Theory
- Computer Simulation

The first of these units listed above (Operations Research in Education) is designed as an introduction to the other four, and is intended to be an "organizer" for the other units. Each of the units introduces a

specific operations research technique and provides instruction on the basic terminology and skills involved in the technique. Each unit gives the user practice in the procedures of the technique and in using the computerized versions of the technique. In each case, instruction is provided in using the computer terminal, inputting the data, and interpreting the output of the computer program.

The summative evaluation of Data Management and Decision Making concludes that it is a validated product with respect to its use as instructional material in college courses in educational administration, inservice training and independent study. Further, it was concluded that the product meets an established need, is therefore a worthwhile product, and because of its comparison with competitors, it also has relatively more worth in the educational marketplace than its competitors.

Selecting and Specifying Computer-Enhanced Units

This set of instructional materials is designed to consist of five books or units:

- The Roles of the Computer in Instruction
- Hardware at a Glance
- Software at a Glance
- Computers in the Curriculum: A Book of Readings
- How to Select Units

The original objective of Selecting and Specifying Computer-Enhanced Units was that all five booklets would form the basis for a four-day workshop on selecting computer-enhanced units, with How to Select Units to serve as the primary text, and the Background Booklets to serve as a supplement for those participants who might lack some necessary knowledge of computers in instruction. Since it was expected that those workshops would involve participants with varying experience in computers, the Background Booklets were designed to bring all participants to a common level of knowledge. However, it is now believed that these materials can be used flexibly in a number of various settings where the concern is instructional applications of the computer (and especially among practicing and student elementary and secondary teachers who have some access to computers).

The summative evaluation of Selecting and Specifying Computer-Enhanced Units concludes that it is a validated product with respect to 1) attainment of system objectives, 2) mode of preparation (equal to or better than competitors), 3) potential for independent use, with a group knowledgeable about computers, and 4) a number of positive effects (e.g., increased sociability among teachers in workshops; development of classroom applications using the computer as an aid to instruction).

II. PURPOSES OF THE MARKET SURVEY

A primary requirement of Phase I of the Computer Technology Project was the conducting of a market survey to determine such factors as market(s) identification, market(s) size, and expected use patterns for the products (e.g., workshops, courses). It was originally the intent of the survey to show commercial publishers the wide-market potential of these computer training materials.

However, between February and May 1976, a number of informal contacts were made with major commercial publishers, seeking to identify their level of interest in publishing the Computer Technology products (Data Management and Decision Making; Selecting and Specifying Computer-Enhanced Units). Included were Prentice-Hall, Harper & Row, Lippincott, Silver Burdett, Charles Merrill, and Xicom. None of these houses expressed any interest in being the publisher for these materials. While not in any way critical of the quality or usability of the products, all the above publishers expressed doubt about their commercial profitability. They categorized the products as having "thin market potential," according to their definition. What most commercial publishers are looking for is material capable of adoption for classroom use with "mass sales potential."

Based on unanimous negative responses from those publishers contacted, final preparation of the survey instruments took on a more comprehensive and encompassing character than originally intended. This was a reflection of the Laboratory's hypothesis that a number of sizable

markets do exist for the products, and it was the Laboratory's firm intent to prove or disprove that hypothesis.

In the design of the survey instruments, answers to the following general questions (relative to marketing planning) were sought:

- Is there a market for the product(s)?
- Who is the market (user audience) for the product(s)?
- What is the size of each market universe?
- What is the potential usage level of the product(s) by each market?
- Are there similar materials available? If so, what is their quality?
- Is pricing a major consideration in the purchase/use of the product(s)?
- What delivery mechanisms are appropriate for reaching each market?
- What is the expected manner of use of the product(s)? (e.g., classes? workshops? reference? preservice?)
- What is the most appropriate design for the product(s)?
- What is the accessibility of the market to needed instructional assists? (e.g., computer terminals)

III. IDENTIFICATION OF POTENTIAL MARKETS

The target markets selected to be surveyed (based on known and/or perceived interest and work in the areas of operations research) were:

For Data Management and Decision Making

- Professors of educational administration (college level)
- Professors of business administration (college level)
- Superintendents of large school districts (elementary/secondary)

For Selecting and Specifying Computer-Enhanced Units

- Professors of teacher education (college level)
- Superintendents of large school districts (elementary/secondary)
- Teachers of social studies (secondary)
- Teachers of mathematics (secondary)

The process for determination of sample size and selection within each target population was as follows:

- PROFESSORS OF EDUCATIONAL ADMINISTRATION:
  The sample was drawn from the membership listing of the University Council for Educational Administration. Of 960 member professors, a random sample of 368 (38%) was selected.
- PROFESSORS OF TEACHER EDUCATION: The sample was drawn from the membership listing of the American Association of Colleges for Teacher Education. Of 813 member institutions (and heads of education colleges or departments, a random sample of 287 (35%) was selected.

- PROFESSORS OF BUSINESS ADMINISTRATION: The American Assembly of Collegiate Schools of Business provided data indicating the existence of about 600 accredited schools of business administration. A sample size of 469 department heads (78%) was drawn from the mailing lists maintained by The Educational Directory, Marion, Ohio.
- SUPERINTENDENTS OF LARGE SCHOOL DISTRICTS: The sample was drawn from mailing lists available through Data Market Retrieval indicating the existence of 4,002 districts, each with K-12 student enrollment of more than 2,500. (This information was closely substantiated by the National Center for Educational Statistics at HEW reporting the existence of 4,000 districts.) Of 4,002 districts, a sample size of 1,664 (42%) was selected.
- SECONDARY TEACHERS: The sample was drawn from mailing lists available through The Educational Directory indicating the existence of 14,000 math and 15,000 social studies teachers. A random sample of each population (13% for math teachers, 8% for social studies) was selected. Since the survey was conducted during summer vacation, questionnaires were sent to teacher's homes.

Table III-1 illustrates pertinent universe data relative to the target audiences surveyed. These numbers provide input with which to project sales of the products once they are published. It is from these populations that random samples for the survey were drawn.

Table III-1 Universe Data Re: Surveyed Target Audiences

Audience Surveyed	Description of Audience Surveyed	Total Approximate Universe for Each Audience
Professors of Business Administration (Department heads)	o There are approximately 600 schools of business administration. o 469 professors (78% of 600) were surveyed.	o There are about 18,000 professors of business in postsecondary institutions. o 133,822 bachelor degrees in B.A. were granted in 1975; 36,364 master's degrees; 1,011 doctorates. o The specific number of potential inservices users is unknown but expected to exceed 10,000 within industry, government and the professional agencies
Professors of Educational Administration (Department heads)	o There are 960 member professors in the UCEA. o There are 47 member secondary institutions in the UCEA. o 368 professors (38% of 960) were surveyed.	o There are 3,000 total professors of education in the USA. o There are 350 institutions offering curriculum in educational administration. o 10,375 master's degrees in educational administration were granted in 1975 and 1,315 doctorates.
Professors of Teacher Education (Department heads)	o There are 813 member institutions in the AACTU. o 287 professors (35% of 813) were surveyed.	o 1,387 postsecondary institutions claim to prepare teachers. o There are about 24,000 teacher educators in the USA. o 167,000 bachelor degrees in education were granted in 1975; 110,000 master's degrees; 7,443 doctorates.
Superintendents of Large School Districts	o There are 4,002 school districts (elementary/secondary) each with student enrollment in excess of 2,500. o 1,664 superintendents (42% of 4,002) were surveyed.	o There are 16,330 total school districts in USA. o There are 22,737 total junior/senior high schools. o There are approximately 55,000 elementary school principals and assistants; 17,000 junior high principals and assistants; 29,000 secondary principals and assistants; 68,000 central office staff
Secondary Teachers (Primarily in mathematics and social studies)	o There are 14,000 secondary math teachers reachable at home. o There are 15,000 secondary social studies teachers reachable at home. o 3,085 (11% of 29,000) were surveyed.	o There are 1.2 million public elementary teachers in USA. o There are 1.0 million public secondary teachers. o 18.9 million junior/senior students take social studies courses. o 13.2 million students are enrolled in math courses. o 12.5 million students are enrolled in natural science courses o 6.4 million students are enrolled in business education courses o 1.4 million students are enrolled in private schools, grades 9-12.

SOURCES:

- o Standard Education Almanac, 1975-76 edition
- o National Center for Educational Statistics at DHEW
- o American Association of Colleges for Teacher Education
- o University Council for Educational Administration
- o American Association of Collegiate Schools of Business

IV. SURVEY DESIGN AND RESPONSES

While the survey instruments (or questionnaires) were judged to be quite comprehensive in terms of the data needed, they still were designed in simplest format for ease of completion by the target audiences.

A two page/one sheet questionnaire, along with a personal letter written for each specific audience, and return stamped envelope were mailed first class to the sample population. Copies of the letters are found in Appendix A, and the instruments are found in Sections V & VI of this report.

The response rates to the mailing are shown as follows:

Table IV-1 Response Rates

Target Market	Sample Population	Percent (%) of Sample Surveyed	Instruments Sent and Received	Number of Responses	Percent (%) of Responses
Professors of teacher education	813	35%	287	127	44.3
Professors of educational administration	960	38%	368	155	42.1
Professors of business administration	600	78%	469	102	21.7
Superintendents	4,002	42%	1,664	407	24.5
Secondary teachers	29,000	11%	3,085	429	13.9
TOTALS			5,873	1,220	20.8%

Respondents from each target audience submitted either comments relative to computer training or sent personal letters expressing valuable input for marketing use. Samples are found in Appendix B.

V . ANALYSIS OF DATA: DATA MANAGEMENT AND DECISION MAKING

Following is a comprehensive analysis of all the information received from the survey, including a review of both frequencies (direct percentage responses to each question) and cross tabulations (comparisons of responses to two questions, one with the other).

The audiences sampled and information for each are:

- Professors of Educational Administration
- Professors of Business Administration
- Superintendents--Administrative Needs

A copy of the appropriate audience survey instrument is included at the beginning of each section, showing the direct percentage responses to each question.

SURVEY OF PROFESSORS OF EDUCATIONAL ADMINISTRATION

This survey is designed to obtain professional advice concerning the education needs of educational administration students in computer assisted data management and decision making. The information gained is most important for the development of appropriate training materials.

1. Indicate whether training in using the computer for management and decision making is a part of your curriculum and if it is required or elective.

	Required	Elective	Not offered but is being considered	Not offered nor is it being considered
Offered as a separate course at graduate level	☐ 3%	☐ 34%	☐ 17%	☐ 31%
Offered as a part of a course at graduate level	☐ 12%	☐ 16%	☐ 18%	☐ 22%
Offered as a separate course at undergraduate level	☐ 0%	☐ 12%	☐ 1%	☐ 37%
Offered as a part of a course at undergraduate level	☐ 0%	☐ 5%	☐ 3%	☐ 37%

2. If computer assisted decision making techniques are taught, check which of the following areas are offered.

☐ Operations research introduction	36%	☐ PERT/CPM	32%
☐ Linear programming	30%	☐ Queueing theory	11%
☐ Computer simulation	28%	☐ Others (please specify)	8%

3. How do you currently assess the importance of the computer for use in management and decision making in education administration?

☐ 38% Very important ☐ 56% Somewhat important ☐ 4% Not important

4. What is your five-year projection regarding the importance of the computer for use in management and decision making in educational administration?

☐ 27% Increase very much ☐ 64% Increase some ☐ 7% No change ☐ 1% Decrease some ☐ 1% Decrease Very much

5. Do you presently have knowledge of materials for the teaching of computer management techniques to students in educational administration?

☐ Yes, and I am satisfied with the quality	4%
☐ Yes, but the materials need improvement	29%
☐ Yes, but I don't know their quality	24%
☐ No	41%

6. Please indicate the accessibility your students have to computer terminals.

☐ 60% Very accessible (on campus) ☐ 35% Somewhat accessible (on or near campus) ☐ 5% Not accessible (neither on nor near campus)

(continued on reverse side)

7. Does your department or some other department on your campus offer inservice courses in computer assisted management and decision making techniques for practicing educational administrators?

☐ 12% Yes, our department does ☐ 26% Yes, another department does (please specify) ☐ 59% No

8. In what state is your college or university located? _____

9. What is the total enrollment of your university or college?

☐ 2% Less than 1,000 ☐ 51% 1,000 to 10,000 ☐ 30% 10,000 to 20,000 ☐ 16% More than 20,000

10. What is the approximate number of students majoring in educational administration at your school?

_____

11. Of these students, what percentage will have received training in computer assisted management and decision making techniques by the conclusion of their program?

_____ %

Thank you again for your assistance. If you wish for us to remain in contact with you after the final development of the materials, fill in your name and address below.

Name _____ Title _____

Institution _____

Business Address _____

If you have any further comments that you feel would help us in the development of useful training materials in this area, please feel free to include them. They are much appreciated.

Return in enclosed postage-paid envelope to:

Office of Marketing and Dissemination
Northwest Regional Educational Laboratory
710 S. W. Second Avenue
Portland, Oregon 97204

Professors of Educational Administration

Good information was received from the professors concerning separate courses at the graduate level (over one-third (34.2 percent) are at schools which offer separate, elective, graduate courses, and nearly another third (31.0 percent) are at schools which do not offer and are not considering offering such courses . In general, however, the response rate concerning the other course offerings in computer training was poor. Between one-third of the professors did not provide information about graduate courses offered as parts of other courses, or undergraduate courses offered. Accordingly, the only analysis concerning course offerings will be that which involves separate, graduate level courses.

From one-fourth to more than one-third of the professors indicated operations research introduction (36.1 percent), linear programming (29.9 percent), computer simulation (28.4 percent), and PERT/CPM (31.6 percent) are areas offered in the computer training taught at their schools. An additional 11.0 percent indicated their schools also offer queueing theory.

According to Table V-1, on the following page, linear programming is offered most often at the graduate level, followed by operations research, PERT/CPM, computer simulation and queueing theory.

The majority of those whose schools offer separate operations research courses at the graduate level (89.2 percent) offer them as electives. This is also true of separate graduate courses in linear

Table V -1 *

Current Use (Graduate Level) vs. Techniques Offered

	Operations Research Introduction		Linear Programming		Computer Simulation		PERT/CPM		Queueing Theory		Other	
	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course
Required	2.6	7.1	2.6	3.3	1.9	3.2	2.6	7.1	1.3	1.9	.6	.6
Elective	21.3	8.4	17.5	9.2	18.1	8.4	18.1	6.5	5.2	2.6	5.8	1.3
Not offered but considered	2.6	1.9	2.6	1.3	2.6	1.9	3.2	3.2	2.6	1.9	--	--
Not offered and not considered	3.9	1.9	2.6	2.0	3.2	1.3	3.2	1.9	.6	--	.6	.6

* All the figures in this and following tables represent percentages within the entire sample. For the sake of brevity, no table includes information about those in the sample who did not respond to one or more of the issues addressed in that table, and therefore the reader should not expect the tables to sum to 100 percent. Except where noted in the narrative, the no-response rate is nominal. However, for the sake of accurate reporting, all percentages which appear in the narrative were calculated including the non-respondents.

programming, computer simulation, and PERT/CPM. This is to be expected inasmuch as the majority of courses offered regardless of subject matter are elective.

Almost every professor in the sample (94.2 percent) feels the use of computers is important in educational administration. Well over one-third of them (38.1 percent) feel computers are very important, and 56.1 percent feel they are somewhat important.

In addition, almost every professor in the sample (90.4 percent) feels the importance of computers in educational administration will increase over the next five years. Over one-fourth of them (26.5 percent) feel computer importance will increase very much and 63.9 percent feel it will increase some. Only 1.2 percent feel it will decrease.

Table V-2 Current Computer Importance vs. Five Year Projection

	Increase Very Much	Increase Some	No Change	Decrease Some	Decrease Very Much
Very important	20.6	17.4	--	--	--
Somewhat important	4.5	44.5	5.8	.6	--
Not important	--	1.9	1.3	--	.6

In light of the overwhelmingly positive responses concerning the current and future importance of computers in educational administration, Table V-2 investigates the relationship between them. The table reveals 87.1 percent of the sample feel the use of the computer is somewhat or very important, and also feel use of the computer will increase in the next five years, a very strong response.

Over half (56.7 percent) of the professors are familiar with available computer training materials, 3.9 percent are satisfied with their quality, 28.9 percent feel they need improvement and 23.7 percent are unsure about their quality. The remaining 41.4 percent are not familiar with the materials.

Table V-3

Current Use (Graduate Level) vs. Knowledge of Available Training Materials

	Yes and Satisfied		Yes but Materials Need Improvement		Yes, Quality Unknown		No	
	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course
Required	--	--	3.3	4.6	--	2.6	--	4.0
Elective	2.0	--	15.8	5.3	5.9	2.0	9.9	7.9
Not offered but considered	1.3	1.3	3.3	2.6	1.6	7.3	6.6	7.3
Not offered and not considered	--	--	3.9	4.6	5.9	4.0	20.4	2.6

Table V-3 shows the majority of professors whose schools offer separate graduate computer courses (73.2 percent) are familiar with available training materials. Of the professors whose schools do not offer separate graduate computer courses, over half (55.4 percent) are not familiar with available materials. These results were not unexpected.

The table also indicates that of those professors who are familiar with available training materials and feel improvement is necessary, the majority (65.9 percent) offer separate graduate computer courses.

Table V-4

Current Computer Importance vs. Knowledge of Available Training Materials

	Yes and Satisfied	Yes, Improvement Needed	Yes, Quality Unknown	No
Very important	2.0	15.1	9.2	10.5
Somewhat important	1.3	13.8	11.8	29.6
Not important	—	—	2.6	.7

It can be seen from the table above that almost two-thirds (61.2 percent) of the sample feel the use of the computer is somewhat or very important, and yet either do not know the quality of or are not familiar with available training materials.

Also, of the professors who feel the use of the computer is very important, the majority (69.0 percent) is familiar with available materials. Of those who feel the use of the computer is only somewhat important, slightly over half (52.3 percent) are not familiar with available materials.

Table V-5

Five Year Projection vs. Knowledge of Available Training Materials

	Increase	No Change	Decrease
Familiar with materials	51.3	3.3	1.3
Not familiar	38.2	3.3	—

Table V-5 shows that the majority of those who feel the use of the computer will increase in importance in the next five years (56.5 percent) are at least familiar with available materials.

The two preceding tables reveal some interesting characteristics about the sample's familiarity with existing computer training materials. In spite of the strongly positive attitudes concerning the current and future importance of computers in educational administration, between one-half and two-thirds of these professors are not sure of the quality of available materials or are not even familiar with the materials.

Well over one-half (60.0 percent) of the professors indicated student accessibility to computer terminals is very good (terminals on campus). Another one-third (34.8 percent) feel terminals are somewhat accessible to their students. These statistics are unexpectedly high considering these schools' modest course offerings in computer training.

Table V-6

Five Year Projection vs. Student Accessibility to Computer Terminals

	Increase	No Change	Decrease
Very accessible	54.2	5.8	—
Somewhat accessible	32.3	1.3	.6
Not accessible	3.9	—	.6

Over one-half (54.2 percent) of the sample feel the importance of computers will increase in the next five years and indicated computer terminals for their students are very accessible. Terminal accessibility can be considered a measure of a school's commitment to computer use for its students. Therefore this table points out that the strong, positive opinions of professors regarding the importance of computers in the future are paralleled by a sizeable commitment in the professors' schools. (See Table V-6).

A majority (58.7 percent) indicated their school does not offer inservice training for practicing educational administrators. One fourth (25.8 percent) indicated another department within their school offers such training. Only 12.3 percent offer inservice training within their own department.

Half (50.6 percent) of the schools in the sample have an enrollment of 1,000-10,000. Over a fourth (29.9 percent) of the schools have an enrollment of 10,000-20,000. Schools over 20,000 make up 16.2 percent of the sample and 1.9 percent are under 1,000. Because of the low percentage of schools under 1,000, no conclusions were drawn about these schools as a group.

Table V-7

Enrollment vs. Current Computer Importance

	< 1,000	1,000-10,000	10,000-20,000	> 20,000
Very important	.6	17.5	11.0	9.1
Somewhat important	.6	30.5	18.2	6.5
Not important	.6	1.9	.6	.6

Table V-7 shows in schools of 1,000 to 10,000 and schools of 10,000 to 20,000 the majority feel the use of the computer is somewhat important (60.3 percent in schools of 1,000 to 10,000 and 60.9 percent in schools of 10,000 to 20,000). In schools over 20,000, the majority (56.0 percent) feel it is very important.

Table V-8 Enrollment vs. Five-Year Projection of Computer Use

	< 1,000	1,000-10,000	10,000-20,000	> 20,000
Increase very much	1.3	11.7	8.4	4.5
Increase some	.6	36.4	16.2	10.4
No change	—	1.9	3.9	1.3
Decrease some	—	—	.6	—
Decrease very much	—	.6	—	—

In schools of all sizes over 1,000, the majority feel the importance of the use of computers will increase somewhat over the next five years (71.8 percent for schools 1,000-10,000, 54.3 percent for schools 10,000-20,000, 64.0 percent for schools over 20,000). (See Table V-8).

Table V-9 Enrollment vs. Student Accessibility to Computer Terminals

	< 1,000	1,000-10,000	10,000-20,000	> 20,000
Very accessible	.6	28.6	19.5	11.7
Somewhat accessible	.6	18.8	10.4	4.5
Not accessible	.6	3.2	—	—

From Table V-9 above it can be seen that in schools of all sizes over 1,000, the majority feel computer terminals are very accessible to their student (56.4 percent in schools 1,000-10,000, 65.2 percent in schools 10,000-20,000, 72.0 percent in schools over 20,000).

Table V-10 Enrollment vs. Inservice Offered

	< 1,000	1,000-10,000	10,000-20,000	> 20,000
Yes, our department	—	5.2	2.6	3.9
Yes, another department	.6	9.1	10.4	5.8
No	1.3	36.4	14.9	5.8
Our department and other departments	—	—	1.3	.6

Table V-10 indicates the majority (71.8 percent) of schools 1,000-10,000 do not offer inservice training. Schools 10,000-20,000 are almost evenly split between not offering inservice training and offering some sort of training. The majority (64.0 percent) of schools over 20,000 offer inservice.

The preceding four tables exhibit a general trend in the sample which is linked to school size. The larger schools have professors who feel more strongly about the importance of computer use, have more accessible computer terminals, and offer inservice training more often than the smaller schools. In almost all cases, the increase in school size is paralleled by the increase in the schools' computer commitment.

SURVEY OF PROFESSORS OF BUSINESS ADMINISTRATION

This survey is designed to obtain professional advice concerning the education needs of business students in operations research. The information gained is most important for the development of appropriate training materials.

1. Indicate whether training in operations research is a part of your curriculum and if it is required or elective.

	Required	Elective	Not offered but is being considered	Not offered nor is it being considered
Offered as a separate course at graduate level	☐ 36%	☐ 8%	☐ 5%	☐ 20%
Offered as a part of a course at graduate level	☐ 10%	☐ 4%	☐ 2%	☐ 17%
Offered as a separate course at undergraduate level	☐ 28%	☐ 35%	☐ 7%	☐ 17%
Offered as a part of a course at undergraduate level	☐ 25%	☐ 9%	☐ 4%	☐ 12%

2. If operations research is taught, check which of the following areas are offered.

☐ Operations research introduction	78%	☐ PERT/CPM	60%
☐ Linear programming	74%	☐ Queueing theory	60%
☐ Computer simulation	54%	☐ Others (please specify)	21%

_____

_____

3. How do you currently assess the importance of the computer for use in management and decision making in business administration?

☐ 79% Very important ☐ 20% Somewhat important ☐ 0% Not important

4. What is your five-year projection regarding the importance of the computer for use in operations research?

☐ 47% Increase very much ☐ 49% Increase some ☐ 4% No change ☐ 0% Decrease some ☐ 0% Decrease very much

5. Do you presently have knowledge of materials for the teaching of operations research using the computer?

☐ Yes, and I am satisfied with the quality	11%
☐ Yes, but the materials need improvement	38%
☐ Yes, but I don't know their quality	24%
☐ No	27%

6. Please indicate the accessibility your students have to computer terminals.

☐ 60% Very accessible (on campus) ☐ 28% Somewhat accessible (on or near campus) ☐ 12% Not accessible (neither on nor near campus)

7. Does your department or any other department offer inservice courses in operations research for business people in the field?

☐ 13% Yes, our department does ☐ 12% Yes, another department does (please specify) ☐ 74% No

_____

(continued on reverse side)

cc

8. In what state is your college or university located? _____

9. What is the total enrollment of your university or college?

☐ Less than 1,000 (10%) ☐ 1,000 to 10,000 (61%) ☐ 10,000 to 20,000 (17%) ☐ More than 20,000 (11%)

10. What is the approximate number of students majoring in business at your school?

Undergraduate: _____

Graduate: _____

11. Of these students, what percentage will have received training in operations research by the conclusion of their program?

Undergraduate: _____%

Graduate: _____%

Thank you again for your assistance. If you wish for us to remain in contact with you after the final development of the materials, fill in your name and address below.

Name _____ Title _____

Institution _____

Business Address _____

If you have further comments that you feel would help us in the development of useful training materials in this area, please feel free to include them. They are much appreciated.

Return in enclosed postage-paid envelope to:

Office of Marketing and Dissemination
Northwest Regional Educational Laboratory
710 S. W. Second Avenue
Portland, Oregon 97204

Professors of Business Administration

Adequate information was received about computer training offered as separate courses at both the graduate and undergraduate level. Over one-third of the sample (36.1 percent) are at schools which offer separate, required computer courses at the graduate level. Also over one-third (35.1 percent) offer separate elective courses to their undergraduates, and an additional one-fourth (27.8 percent) offer separate, required, undergraduate courses.

Between one-half and two-thirds of the professors provided no information about computer courses offered to graduates and undergraduates as parts of other courses. Because of this poor response rate, no analysis of courses offered as parts of other courses will be included.

Computer topics are included more frequently in the business administration curriculum than in the educational administration curriculum. Three-fourths of the professors indicated their schools offer operations research introduction (79.4 percent) and linear programming (74.5 percent) as part of their computer training. Over half also offer PERT/CPM (61.8 percent), queueing theory (59.8 percent), and computer simulation (53.9 percent). These statistics indicate the schools represented in the sample have a strong interest in the use of computers and a commitment to provide computer training to their students.

Of those schools which offer separate, graduate courses, a strong majority of the courses for each computer topic are required (operations research introduction, 80.6 percent; linear programming, 82.5 percent;

computer simulation, 85.8 percent; PERT/CPM, 90.0 percent; queueing theory, 87.9 percent). (See Table V-11 on the following page.)

A majority of professors indicated their school covers operations research introduction (58.8 percent) and linear programming (58.8 percent) in separate courses. Nearly half also cover PERT/CPM (47.4 percent) and queueing theory (44.5 percent) in separate, undergraduate courses. For all topics, the split between elective and required courses is fairly close. (See Table V-12 on the following page.)

Table V-12 points up a significant emphasis on computer training at the undergraduate level. Table V-11 shows less schools offering graduate training. However, almost all of the schools which do offer graduate computer courses require their students to take them, while the schools which offer undergraduate computer courses are split between required courses and electives.

Over three-fourths of the professors (78.4 percent) feel the use of the computer in management and decision making is very important. Not one professor indicated the use of the computer is not important. This is an overwhelmingly positive response, the strongest of all the samples.

Half (50.5 percent) feel the importance of the computer for use in operations research will increase some over the next five years. Almost all of the remaining professors (45.5 percent of the sample) feel the importance will increase very much. No one feels the importance will decrease. This, too, is a very positive response.

Table V-11 Current Use (Graduate Level) vs. Computer Topics Taught

	Introduction		Linear Programming		Computer Simulation		PERT/CPM		Queueing Theory		Other	
	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course
Required	34.0	9.0	34.0	10.0	24.7	8.0	27.8	9.0	29.9	7.0	12.5	2.0
Elective	8.2	4.0	7.2	4.0	4.1	4.0	3.1	2.0	4.1	2.0	2.1	1.0
Not offered but considered	4.1	--	3.1	1.0	3.1	1.0	3.1	1.0	1.0	--	1.0	--
Not offered, not considered	8.2	6.0	8.2	6.0	6.2	4.0	4.1	3.0	5.2	4.0	2.1	2.0

Table V-12 Current Use (Undergraduate Level) vs. Computer Topics Taught

	Introduction		Linear Programming		Computer Simulation		PERT/CPM		Queueing Theory		Other	
	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course
Required	25.8	22.5	26.8	17.6	16.5	13.7	22.7	15.7	22.7	13.7	10.4	6.9
Elective	33.0	6.9	32.0	7.8	22.7	6.9	24.7	8.8	25.8	3.9	8.3	2.0
Not offered but considered	4.1	1.0	2.1	1.0	2.1	1.0	3.1	1.0	3.1	--	--	--
Not offered, not considered	5.2	1.0	5.2	1.0	5.2	--	3.1	--	1.0	--	1.0	--

Table V-13 Importance of Computer Use vs. Five Year Projection

	Very Important	Somewhat Important	Not Important
Increase very much	40.6	5.0	--
Increase some	36.6	13.9	--
No change	2.0	2.0	--
Decrease some	--	--	--
Decrease very much	--	--	--

Table V-13 confirms the fact that a substantial majority of the sample feel the use of computers in business administration is and will continue to be significant. Over three-fourths of the sample (77.2 percent) feel computer use is currently very important and expect it to increase over the next five years.

Almost three-fourths of the professors (74.3 percent) are familiar with available computer training materials. Only 10.9 percent are satisfied with their quality, 39.6 percent feel they need improvement, and 23.8 percent are unsure about their quality.

Table V-14 Importance of Computer Use vs. Knowledge of Available Training Materials

	Very Important	Somewhat Important	Not Important
Yes, satisfied	7.9	3.0	--
Yes, improvement needed	32.7	5.9	--
Yes, quality unknown	16.8	3.9	--
No	21.8	4.0	--

According to Table V-14, of those professors who feel the use of the computer in business administration is very important, almost three-fourths (72.5 percent) are familiar with available training materials and 41.3 percent feel they need improvement.

Table V-15 Five Year Projection vs.
Knowledge of Available Training Materials

	Increase Very Much	Increase Some	No Change	Decrease Some	Decrease Very Much
Yes, satisfied	4.0	7.0	--	--	--
Yes, improvement needed	20.0	18.0	1.0	--	--
Yes, quality unknown	9.0	14.0	1.0	--	--
No	13.0	11.0	2.0	--	--

Almost three-fourths (72.0 percent) of the sample feel the use of computers will increase in the next five years and are familiar with available training materials. Well over a third of the sample (38.0 percent) feel the use of computers will increase and the available materials need improvement. (See above, Table V-15)

The two preceding tables show the majority of the sample to be both enthusiastic about the use of computers in their field and informed about the training literature available. A significant number of professors (approximately 40 percent) feel the available materials need improvement.

The majority of the sample (60.8 percent) indicated their computer terminals are very accessible to their students (on campus). An additional 27.5 percent have terminals for their students on or near campus.

Table V-16 Five Year Projection vs. Accessibility to Terminals

	Increase Very Much	Increase Some	No Change	Decrease Some	Decrease Very Much
Very accessible	29.7	30.7	1.0	--	--
Somewhat accessible	11.9	12.9	8.0	--	--
Not accessible	4.0	6.9	1.0	--	--

Table V-16 shows another facet of the high degree of commitment to the use of computers by the professors of business administration. The majority (60.4 percent) feel use of computers will increase in the next five years and report computer terminals very accessible to their students.

In light of the strong computer interest expressed in general by the sample, it is surprising that 74.3 percent indicated their school does not offer inservice training in the use of the computer for business people in the field. This is in sharp contrast with the high level of training offered to students in business administration programs.

Table 17 Importance of Computer Use vs. Inservice Offered

	Very Important	Somewhat Important	Not Important
Yes, our department	11.8	1.0	--
Yes, another department	10.8	1.0	--
No	54.9	18.6	--
Our department and another department	1.0	--	--

As Table V-17 indicates, over half (54.9 percent) of the sample feel the computer is very important in business administration and yet their schools do not offer inservice training. Less than one-fourth of the sample (23.6 percent) feel the computer is very important and are in schools which do offer inservice training.

Table V-18 Knowledge of Available Training Materials vs. Inservice Offered

	Yes Satisfied	Yes, Improvement needed	Yes, Quality Unknown	No
Yes, our department	—	7.9	3.0	2.0
Yes, another department	4.0	2.0	1.0	5.0
No	6.9	28.7	19.8	18.8
Our department and another department	—	1.0	--	--

The above table shows that of those professors whose schools do not offer inservice training, the majority (74.7 percent) are familiar with available training materials and 65.3 percent either feel the materials need improvement or are not familiar with their quality.

The majority (60.4 percent) of the schools in the sample have enrollments of 1,000-10,000. Schools of 10,000-20,000 make up 15.8 percent of the sample. One eighth of the schools (12.9 percent) are over 20,000 and 9.9 percent are under 1,000.

Table V-19 Current Use (Graduate Level) vs. Enrollment

	< 1,000		1,000-10,000		10,000-20,000		> 20,000	
	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course
Required	2.1	—	17.5	4.0	8.2	2.0	7.2	4.0
Elective	--	1.0	3.1	—	2.1	1.0	3.1	2.0
Not offered but considered	--	--	4.1	2.0	1.0	--	--	--
Not offered, not considered	3.1	3.0	12.4	12.0	3.1	2.0	1.0	--

Table V-19 shows in schools over 10,000, the majority offer separate computer courses at the graduate level (62.5 percent in schools 10,000-20,000, 90.9 percent in schools over 20,000).

Also, regardless of school size, the strong majority of separate courses offered are required rather than elective. This is consistent with earlier observations about the sample as a whole.

Table V-20 Current Use (Undergraduate Level) vs. Enrollment

	< 1,000		1,000-10,000		10,000-20,000		> 20,000	
	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course	Separate Course	Part of a Course
Required	1.0	2.0	14.4	15.7	8.2	2.9	3.1	3.9
Elective	1.0	--	20.6	4.9	6.2	1.0	7.2	2.9
Not offered but considered	--	--	6.2	3.9	--	--	1.0	--
Not offered, not considered	5.2	3.9	10.3	6.9	2.1	1.0	--	--

From the above table it can be seen that in schools over 1,000, the majority offer separate undergraduate computer courses (57.6 percent in schools 1,000-20,000, 90.9 percent in schools over 20,000). This is in keeping with the previous observation that there is significant emphasis within the sample on separate courses at the undergraduate level.

In schools of all sizes, the number of separate, elective computer courses offered at the undergraduate level is about the same as the number of separate, required courses. This too reflects the general tendency mentioned earlier.

Table V-21 Enrollment vs. Inservice Offered

	< 1,000	1,000-10,000	10,000-20,000	> 20,000
Yes, our department	0	4.9	4.9	2.9
Yes, another department	1.0	3.9	2.0	4.9
No	8.8	31.0	8.8	4.9
Our department and another department	--	1.0	--	--

Table V-21 shows in schools under 20,000, the majority does not offer inservice training of any kind (90.0 percent in schools under 1,000, 83.9 percent in schools 1,000-10,000, 56.3 percent in schools 10,000-20,000). A majority of professors (61.5 percent) from schools over 20,000 indicated either their department or another department (not both) offers training.

The preceding three tables show the same characteristics about school size which are evident in the other samples. As school size increases, the percentage of courses and inservice training offered also increases.

SURVEY OF SCHOOL DISTRICT SUPERINTENDENTS

This survey is designed to obtain professional advice concerning needs in two areas: (1) school administrators' knowledge of computer assisted data management and decision making, and (2) teacher understanding of the use of the computer as an aid to instruction. The information gained is most important for developing appropriate training materials.

ADMINISTRATOR NEEDS

1. Please indicate the number of each kind of administrator you have in your district and check how desirable it is that they have training in computer assisted management and decision making.

Number	Very desirable	Somewhat desirable	Not needed
_____ Elementary	☐ 20%	☐ 53%	☐ 17%
_____ Junior high	☐ 30%	☐ 48%	☐ 5%
_____ Secondary	☐ 51%	☐ 35%	☐ 3%
_____ Central office	☐ 63%	☐ 26%	☐ 2%

2. How many administrators in each category do you estimate now have this training?

	Less than 10%	10% to 25%	25% to 50%	More than 50%
Elementary	☐ 82%	☐ 10%	☐ 2%	☐ 2%
Junior high	☐ 62%	☐ 14%	☐ 8%	☐ 4%
Secondary	☐ 52%	☐ 18%	☐ 13%	☐ 9%
Central office	☐ 40%	☐ 24%	☐ 20%	☐ 12%

3. Five years from now at what level do you estimate administrators in your district will be using computers for planning and management?

☐ 33% Much more than now ☐ 52% Somewhat more than now ☐ 14% About the same ☐ Somewhat less than now ☐ Much less than now

4. Would you prefer that administrators presently working for your district acquire their computer training in workshops in the district or get it at a college or university?

☐ 64% Workshops in the district ☐ 6% At a college or university ☐ 30% No preference

5. If you were to offer a workshop for administrators to obtain training in computer assisted data management and decision making, when would you prefer to hold it?

☐ 17% Fall ☐ 25% Winter ☐ 12% Spring ☐ 54% Summer

6. Do you know of training materials for school administrators in computer assisted data management and decision making which are currently available?

☐ 5% Yes, and the quality is satisfactory ☐ 33% Yes, but I don't know their quality ☐ 7% Yes, but the materials need improvement ☐ 54% No

7. Is there currently a person in your district who could assist in inservice training of administrators if he or she had economical and efficient materials to use?

☐ 55% Yes ☐ 41% No ☐ 2% We plan to employ such a person

8. Does your school district have or plan to obtain access to a computer terminal for instructional and management purposes?

	Presently have	Plan to obtain	No plans to obtain
For management	☐ 49%	☐ 19%	☐ 27%
For instruction	☐ 50%	☐ 15%	☐ 30%

(continued on reverse side)

9. If your district would budget money for an instructor, materials, and computer access for the training of present administrators in management and decision making techniques, approximately how much per participating administrator would be budgeted annually?

☐ 36% Less than $100 ☐ 32% $100 to $250 ☐ 8% More than $250 ☐ 14% None

TEACHER NEEDS

10. Do your secondary teachers currently use a computer terminal for classroom instruction?

	Always	Occasionally	No, but plan to add	No, and not in near future
Science teachers	☐ 3%	☐ 29%	☐ 11%	☐ 40%
Math teachers	☐ 13%	☐ 41%	☐ 10%	☐ 29%
Social science teachers	☐ .5%	☐ 14%	☐ 10%	☐ 51%
Other _____	☐ 4%	☐ 13%	☐ 4%	☐ 25%

11. In five years what role would you expect computers to play in classroom instruction?

☐ 21% Much more important than now ☐ 56% Somewhat more than now ☐ 18% About the same as now ☐ .2% Less than now ☐ 2.5% None at all

12. If your teachers were to receive training on how to use the computer in instruction, where should they get it?

☐ 67% Inservice training within the school district ☐ 25% At a college or university ☐ 4% Neither; the training is not needed ☐ 2% Other (please specify) _____

13. If you had economical and efficient materials for training teachers in the instructional use of computers, would you offer inservice training?

☐ 75% Yes ☐ 20% No (If no, why?) _____

14. When would you offer such inservice training to teachers? (Check all that apply)

☐ 42% Fall ☐ 40% Winter ☐ 32% Spring ☐ 40% Summer

15. Do you know of materials for training teachers in the instructional use of computers?

☐ 7% Yes, and they are satisfactory ☐ 10% Yes, but they need improvement ☐ 27% Yes, but I don't know their quality ☐ 52% No

16. If your district budgeted money for instructor, materials, and computer access for training teachers in the use of computers, how much per participating teacher would be budgeted annually?

☐ 44% Less than $75 ☐ 18% $75 to $150 ☐ 8% More than $150 ☐ 18% None

17. Indicate the student enrollment of your school district.

☐ 34% 2,500 to 4,999 ☐ 32% 5,000 to 9,999 ☐ 22% 10,000 to 24,999 ☐ 11% 25,000 or more

18. In what state is your school district located? _____

Thank you again for your assistance. If you wish for us to remain in contact with you after the final development of the materials, fill in your name and address below.

Name _____ Title _____

Institution _____

Business Address _____

If you have any further comments that you feel would help us in the development of useful training materials, please feel free to include them. They are much appreciated.

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34

Superintendents--Administrative Needs

Over three-fourths of the superintendents feel it is desirable for administrators on all levels to have computer training. Of the four administrative levels, the superintendents feel it is most important for central office administrators to have computer skills (62.8 percent, very desirable; 25.7 percent, somewhat desirable). Next in order of importance are secondary administrators (51.1 percent, very desirable; 35.0 percent, somewhat desirable) followed by junior high administrators (30.1 percent, very desirable; 48.0 percent, somewhat desirable), and elementary administrators (20.0 percent, very desirable, 53.0 percent, somewhat desirable). Among the four administrative levels, more superintendents at the elementary level feel computer skills are not needed (17.3 percent) than at any other level.

The superintendents estimate that their central office administrators have more computer training than administrators at any other level (39.6 percent estimate less than 10 percent of their central office administrators have computer training; 24.8 percent feel 10 to 25 percent have training; 19.2 percent feel 25 to 50 percent have training; 11.5 percent feel over 50 percent are trained). Secondary administrators have the second highest amount of training (52.5 percent of the superintendents estimate less than 10 percent currently have computer training; 18.0 percent feel 10 to 25 percent have such training; 12.7 percent feel 25 to 50 percent of them have training).

Junior high administrators have the next amount of training (61.8 percent of the superintendents estimate less than 10 percent have training; 13.7 percent feel 10 to 25 percent have such training). The superintendents feel the least trained administrators are those on the elementary level (81.8 percent estimate less than 10 percent have computer training; 9.9 percent estimate 10 to 25 percent have such training).

Table V-22 Desirability of Computer Training vs. Percentage of Staff Trained

	Very Desirable		Somewhat Desirable or Not Needed	
	Less than 10 Percent	Greater than 10 Percent	Less than 10 Percent	Greater than 10 Percent
Elementary	14.9	5.2	62.4	7.0
Junior high	18.4	11.5	38.7	13.8
Secondary	23.6	28.8	25.8	11.6
Central Office	21.2	40.7	15.2	12.1

Of those superintendents who think administrative training in computer skills is very desirable on the elementary and junior high level, the majority (74.1 percent, elementary; 61.2 percent junior high) have less than 10 percent of their administrators with such training. Of those who think that administrative training in computer skills is very desirable on the secondary or central office level, the majority (52.4 percent, secondary; 64.7 percent, central office) have staffs with more than 10 percent trained. These results from Table V-22 are consistent with the distribution of percentages of trained staff (higher percentages of training at the secondary and central office levels) previously observed.

The great majority of superintendents (84.3 percent) feel administrators in their district will increase their use of the computer over the next five years. About one-third (32.9 percent) feel they will use it much more than now, and over one-half (51.4 percent) feel they will use it somewhat more than now. No one feels they will be using the computer less than now.

Table V-23 Desirability of Computer Training vs. Five Year Projection

	Elementary		Junior High		Secondary		Central Office	
	Very Desirable	Somewhat Desirable or Not Needed	Very Desirable	Somewhat Desirable or Not Needed	Very Desirable	Somewhat Desirable or Not Needed	Very Desirable	Somewhat Desirable or Not Needed
Much more	12.1	18.1	16.6	11.9	25.1	6.2	27.7	3.5
Somewhat more or about the same	7.9	51.8	13.2	41.1	25.8	30.9	35.1	23.9
Less	—	—	—	—	—	—	—	—

Table V-23 shows that of those who feel it is very desirable for elementary and junior high level administrators to have computer training, the majority (77.2 percent for elementary, 55.4 percent for junior high) feel administrators in their district will be using computers much more than now. Of those who feel it is very desirable for secondary and central office administrators to have computer training, the majority feel in the future administrators will be using the computer somewhat more than now or about the same (50.5 percent, secondary and 56.0 percent central office). At first glance this observation may appear to be unusual. However, indications are that secondary and central office administrators already use the computer, so there is a greater margin for increased usage at the elementary and junior high levels.

The majority of superintendents in the sample (63.5 percent) prefer their administrators to acquire computer training through workshops in the district. Another 29.8 percent have no preference between workshops and college courses.

Over half of the superintendents (54.3 percent) prefer to offer computer training workshops for their administrators in the summer. An additional one-fourth (25.1 percent) wish to offer them in the winter. The remainder are split between fall (17.0 percent) and spring (12.1 percent).

Less than half of the superintendents (45.5 percent) are familiar with available computer training materials. Only 5.4 percent are satisfied with their quality. One-third (33.2 percent) feel they need improvement, and 6.9 percent are unsure of their quality. More than one-half (53.6 percent) are unfamiliar with available materials.

Of those who feel it is very desirable for administrators at the elementary, junior high, and central office levels to have computer training, almost half are familiar with available training materials (48.1 percent, elementary; 49.6 percent, junior high; 47.2 percent, central office). A little over half (54.9 percent) of those who feel it is very important for administrators at the secondary level to have computer training are familiar with available training materials. These statistics reflect the general pattern of roughly half the superintendents familiar with current training literature and the other half unfamiliar with them. (See Table V-24 on the following page.)

Table V-24 Desirability of Computer Training vs. Knowledge of Available Training Materials

	Elementary			Junior High			Secondary			Central Office		
	Very Desirable	Somewhat Desirable	Not Needed	Very Desirable	Somewhat Desirable	Not Needed	Very Desirable	Somewhat Desirable	Not Needed	Very Desirable	Somewhat Desirable	Not Needed
Familiar with materials	9.7	23.0	6.9	14.9	21.4	1.2	28.0	12.6	.7	29.6	10.7	.2
Not familiar	10.1	29.5	10.4	14.9	26.3	4.0	22.8	21.8	1.7	32.9	14.5	1.7

Table V-25 Five Year Projection vs. Knowledge of Available Training Materials

	Much More	Somewhat More	About the Same	Less
Familiar with materials	19.1	21.2	4.9	--
Not familiar	13.8	30.0	9.3	--

Of those who feel in five years their district will be using the computer much more than now, the majority (58.2 percent) is familiar with available training materials. Of those who feel computers will be used in their district in the next five years only somewhat more than now, the majority (58.4 percent) is not familiar with available materials. Table V-25 reveals an interesting characteristic regarding familiarity of training materials. Those superintendents who feel very strongly about a future increase in computer use tend to be familiar with available materials while those who do not feel as strongly tend to be unfamiliar with the materials.

Slightly more than half of superintendents (55.0 percent) indicated there is currently a person in the district who could assist in inservice training. The other 41.5 percent indicated there is no such person in their district.

Table V-26 Five Year Projection vs. Person to Assist in Inservice

	Much More	Somewhat More	Same	Less
Yes	23.3	27.5	3.9	--
No	8.4	22.9	10.1	--
Plan to hire	.2	.5	.2	--

Table V-26 shows of those who feel in the next five years their district will be using the computer much more than now, a strong majority (70.9 percent) presently have a person on their staff who is qualified to help with inservice

workshops. Of those who feel the use of the computer will increase somewhat, there is a smaller majority (53.6 percent) who presently have a qualified person on their staff for training.

V-27 Where Training Preferred vs. Person to Assist in Inservice

	Workshop In District	College Course	No Preference
Yes	39.2	2.3	14.0
No	22.7	3.3	14.5
Plans to hire	1.5	.2	.2

Exactly half of those who prefer college for training or have no preference do not have a qualified person on staff to conduct inservice training. The majority (61.8 percent) of those who desire workshops have such a person on staff. (See Table V-27)

The two preceding tables point out that superintendents who feel strongly about an increased use of the computer in the future and those who prefer workshops for training their administrators are more likely to have a person on staff who could assist in inservice training.

Almost half of the superintendents (48.8 percent) presently have access to computer terminals for management purposes. Over one-fourth (27.6 percent) do not have such access and do not plan to obtain it, while 19.2 percent have plans to obtain access.

Table V-28 (on following page) shows that at all administrative levels, a majority of those who feel training in computers is very desirable said that they presently have access to a computer terminal (55.6 percent, elementary; 58.3 percent, junior high; 53.2 percent, secondary; 54.2 percent, central office). The same holds true for those who feel computer training for administrators is somewhat desirable, except at the central office level.

At every level, the majority of those who indicated that their administrative staffs contained more than 10 percent trained in the use of computers presently have access to computer terminals (68.5 percent, elementary; 60.4 percent, junior high; 60.2 percent, secondary; 57.3 percent, central office). (See Table V-29 on the following page)

While only about half of the sample in general indicated their administrators currently have access to terminals, the two preceding tables reveal additional information regarding terminal accessibility. Those superintendents who feel strongly about their administrators having computer skills, and those whose present staff are at least 10 percent trained tend to already have access to terminals.

About one-third of the superintendents (36.1 percent) feel their district would budget less than $100 per administrator for computer training, and another one-third (31.9 percent) feel their district would budget $100 to $250 per administrator. Only 13.8 percent feel their district will not budget any money for computer training.

Table V-28 Desirability of Computer Training vs. Accessibility of Terminals

	Elementary			Junior High			Secondary			Central Office		
	Very	Somewhat	Not	Very	Somewhat	Not	Very	Somewhat	Not	Very	Somewhat	Not
Presently have	11.2	26.8	7.9	17.4	23.6	2.5	27.1	18.2	.5	34.0	11.2	.7
Plan to get	4.2	9.9	2.2	5.5	9.2	.2	10.4	5.7	.2	13.7	3.5	--
No plans	3.2	14.1	6.9	4.7	13.9	2.5	10.4	10.4	1.7	12.0	10.2	1.2

Table V-29 Percentage of Staff Trained vs. Accessibility of Terminals

	Elementary		Junior High		Secondary		Central Office	
	$<$ 10 Percent	$\geq$ 10 Percent	$<$ 10 Percent	$\geq$ 10 Percent	$<$ 10 Percent	$\geq$ 10 Percent	$<$ 10 Percent	$\geq$ 10 Percent
Presently have	37.4	9.1	28.1	15.8	21.9	24.0	15.3	31.8
Plan to obtain	15.5	2.2	11.6	4.4	10.8	7.2	7.9	9.8
No plans to obtain	25.4	1.7	19.5	4.9	18.2	6.7	15.0	11.4

Table V-30 Desirability of Computer Training vs. Dollars Budgeted for Training

	Elementary		Junior High		Secondary		Central Office	
	Very Desirable	Somewhat Desirable or Not Needed	Very Desirable	Somewhat Desirable or Not Needed	Very Desirable	Somewhat Desirable or Not Needed	Very Desirable	Somewhat Desirable or Not Needed
Less than $100	6.7	26.8	10.9	19.6	17.1	14.1	22.7	10.5
$100-$250	8.4	20.5	12.2	14.9	19.9	9.9	23.9	5.2
Greater than $250	1.5	6.2	2.7	4.2	5.2	2.2	5.2	2.5
None	1.7	10.9	2.5	9.2	5.7	6.0	5.5	6.2

Table V-30 on preceding page shows within each administrative level, of those who feel training in computers is very desirable, more superintendents would budget $100 to $250 than any other budget amount. A majority at each level would budget up to $250. This indicates a certain amount of willingness to budget more money for training on the part of superintendents who feel strongly about the desirability of computer training. It should be noted, however, that this willingness is not very strong.

One-third of the superintendents in the sample (34.6 percent) are from school districts with 2,500-4,999 students, and another third (32.1 percent) are from districts with 5,000-9,999 students. Districts of 10,000-24,999 make up one-fifth of the sample (21.3 percent) and 10.5 percent are districts over 25,000.

Table V-31 Enrollment vs Knowledge of Available Training Materials

	2,500-4,999	5,000-9,999	10,000-24,999	≥ 25,000
Familiar with materials	13.8	15.0	10.9	5.3
Not familiar	20.4	16.7	10.6	5.2

The above table shows in districts over 10,000, slightly more than half of the superintendents are familiar with available training materials (50.6 percent for districts 10,000-24,999, 51.2 percent for district 25,000 or more). In districts under 10,000, over half are not familiar with available materials (58.9 percent for districts under 5,000, 52.3 percent for districts

5,000-9,999). These low levels of familiarity reflect the generally uninformed state of the sample as a whole.

Table V-32 Enrollment vs. Person to Assist in Inservice

	2,500-4,999	5,000-9,999	10,000-24,999	≥ 25,000
Yes	13.0	17.0	14.7	9.8
No	20.4	14.0	5.7	.7
Plan to hire	.7	.2	1.0	—

In districts of 5,000 or more, the majority of superintendents indicated that there is a person within the district who could help with inservice training (53.1 percent in districts 5,000-9,999, 69.0 percent in districts 10,000-24,999, 93.0 percent in districts over 25,000). In districts under 5,000, the majority (58.9 percent) of superintendents indicated that they have no such person. (See above table)

Table V-33 Enrollment vs. Accessibility of Terminals

	2,500-4,999	5,000-9,999	10,000-24,999	≥ 25,000
Presently have access	13.1	14.8	13.3	7.1
Plan to obtain	6.2	7.4	3.2	2.2
No plans to obtain	12.6	9.1	4.7	1.0

Table V-33 shows in districts of 10,000 or more, the majority of superintendents indicated their district currently has access to a computer terminal for management purposes (62.8 percent in districts 10,000-24,999, 67.4 percent in districts of over 25,000). Close to half (46.2 percent) of the superintendents from districts of 5,000-9,999 have access to terminals for management, as do over one-third (37.6 percent) of the superintendents from districts of

2,500-4,999. Districts of under 5,000 have the highest percentage (36.2 percent) of superintendents who have no plans for gaining access to a computer terminal (as compared to 28.5 percent for 5,000-9,999, 22.1 percent for 10,000-24,999, and 9.3 percent for districts over 25,000).

A trend has emerged concerning district size which is also evident in the other samples. Larger districts (like larger schools) are generally more aware of and committed to computer use than are smaller districts, and the level of commitment increases as district size increases. Table V-31 shows this in connection with familiarity of training materials, and Table V-32 shows this in connection with having a person available to assist with computer training. Table V-33 doubly reinforces the trend with accessibility to terminals increasing with district size, and the percentage of superintendents with no plans for installing terminals decreasing as district size increases.

VI. ANALYSIS OF DATA: SELECTING AND SPECIFYING COMPUTER-ENHANCED UNITS

Following is a comprehensive analysis of all the information received from the survey, including a review of both frequencies (direct percentage responses to each question) and cross tabulations (comparisons of responses to two questions, one with the other).

The audiences sampled and information for each are:

- Professors of Teacher Education
- Teachers
- Superintendents--Teacher Needs

A copy of the appropriate audience survey instrument is included at the beginning of each section, showing the direct percentage responses to each question.

SURVEY OF PROFESSORS OF TEACHER EDUCATION

This survey is designed to obtain professional advice concerning the needs in the education of teachers for developing skills in utilizing the computer as an aid to instruction. The information gained is most important for developing appropriate training materials.

1. How important do you consider it to be for classroom teachers to understand the role of the computer in our society?

	Very Important	Somewhat Important	No Importance
Elementary teachers	☐ 47%	☐ 51%	☐ 1%
Junior high teachers	☐ 61.4%	☐ 38.6%	☐ 0%
Secondary teachers	☐ 76.4%	☐ 23.6%	☐ 0%

2. How important is it that teachers at each level indicated below be able to use the computer for classroom instruction for such areas as simulation, problem solving, or storage and retrieval processes?

	Very Important	Somewhat Important	No Importance
Elementary	☐ 12.7%	☐ 62%	☐ 20.6%
Junior high math	☐ 57.5%	☐ 37.8%	☐ 3%
Junior high science	☐ 53.2%	☐ 41.3%	☐ 4%
Junior high social studies	☐ 24.4%	☐ 59.8%	☐ 11.8%
Other junior high classes-- _____	☐ 9.4%	☐ 18.1%	☐ 3.9%
_____	☐	☐	☐
Secondary math	☐ 79.5%	☐ 17.3%	☐ 1%
Secondary science	☐ 76.4%	☐ 20.5%	☐ 1%
Secondary social studies	☐ 40.9%	☐ 48.0%	☐ 6%
Secondary vocational education	☐ 44.4%	☐ 40.5%	☐ 4%
Other secondary classes-- _____	☐ 10%	☐ 12%	☐ 2%
_____	☐	☐	☐

3. Indicate whether training in using the computer in instruction is a part of your undergraduate curriculum, at what level, and if it is required or an elective.

	Not offered	Offered as a separate course	Offered as part of a course	(Check one if offered) Required	Elective
Elementary	☐ 60%	☐ 12%	☐ 9%	☐ 6%	☐ 17%
Secondary math	☐ 33%	☐ 39%	☐ 16%	☐ 26%	☐ 32%
Secondary science	☐ 40%	☐ 27%	☐ 18%	☐ 14%	☐ 32%
Secondary social studies	☐ 52%	☐ 20%	☐ 8%	☐ 7%	☐ 24%
Secondary vocational education	☐ 53%	☐ 10%	☐ 6%	☐ 4%	☐ 11%
Secondary business education	☐ 41%	☐ 24%	☐ 11%	☐ 18%	☐ 18%

(continued on reverse side)

4. Do any of the students of teacher education in the subject areas listed in question 3 have the opportunity to work on computer terminals?

☐ 22% Frequently ☐ 44% Sometimes ☐ 19% Seldom ☐ 11% No

5. What is your projection for the next five years regarding the emphasis your institution will place on training undergraduate and graduate students of teacher education in the use of computers?

☐ 17.3% Increase very much ☐ 68.5% Increase some ☐ 13.4% No change ☐ Decrease some ☐ Decrease very much

6. Are you familiar with training materials to prepare teachers in the use of computers for instruction?

☐ Yes, and they are of satisfactory quality 2%

☐ Yes, but the materials need improvement 17%

☐ Yes, but I don't know their quality 34%

☐ No 46%

7. Are inservice courses for practicing teachers on using computers in the classroom offered by your department?

☐ 4% Yes, frequently ☐ 18% Yes, occasionally ☐ 77% No

8. What is the approximate total enrollment of your university or college?

☐ 22% Less than 1,000 ☐ 60% 1,000 to 10,000 ☐ 12% 10,000 to 20,000 ☐ 6% More than 20,000

9. What is the approximate number of students majoring in educational administration at your school?

_____

10. Of these students, what percentage will have received training in computer utilization for instruction by the conclusion of their program?

_____%

11. Please indicate the state where your college or university is located.

_____

Thank you for your assistance. If you wish for us to remain in contact with you after final development of the materials, fill in your name and address below.

Name _____ Title _____

Institution _____

Business Address _____

If you have any further comments that you feel would help us in the development of useful training materials in this area, please feel free to include them. They are much appreciated.

Return in enclosed postage-paid envelope to: Office of Marketing and Dissemination
Northwest Regional Educational Laboratory
710 S. W. Second Avenue
Portland, Oregon 97204

A. Professors of Teacher Education

Almost all of the professors indicated they feel it is important for classroom teachers at various levels to be able to understand the role of the computer in our society. The professors place the most emphasis on teachers at the secondary level (76.4 percent feel an understanding is very important, 23.6 percent feel it is somewhat important), and feel almost as strongly about teachers at the junior high level (61.4 percent feel an understanding is very important, 38.6 percent feel it is somewhat important). The least emphasis is placed on elementary teachers (47.2 percent feel an understanding is very important while 51.2 percent feel it is somewhat important).

Almost all professors also indicated they feel it is important for classroom teachers at various grade and subject levels to be able to use the computer for simulation, problem solving, or storage and retrieval processes. The professors put the most emphasis on secondary math and science teachers, with over three-fourths of the sample (79.5 percent, math; 76.4 percent, science) indicating they feel the ability to use the computer in classroom instruction is very important. The next group of teachers in descending order of emphasis is the junior high math and science teachers (57.5 percent feel the ability to use the computer is very important for junior high math teachers, 53.2 percent feel that way about junior high science teachers). Secondary social studies teachers and secondary vocational education teachers are the third group, with 40.9 percent and 44.4 percent (respectively) of the professors indicating the ability to use the computer is very important for these teachers. The professors place the least amount of emphasis on elementary teachers and junior high social

studies teachers, with under one-fourth of the sample (12.7 percent, elementary; 24.4 percent, junior high social studies) indicating they feel it is very important for these teachers to possess such skills.

On the whole, the professors indicated that their schools include only modest amounts of computer training in their undergraduate curriculum. A total of 59.8 percent reported their schools do not offer any computer training to their elementary education students; 52.8 percent reported the same for their secondary vocational education students; 52.0 percent reported similarly for their secondary social studies students. Secondary math education, science education and business education students receive the most undergraduate training. The professors indicated that 55.1 percent (math), 44.9 percent (science), and 35.4 percent (business education) of their schools offer some form of computer training to these students. One-tenth to one-third of the professors in the sample did not provide any information in this area.

It should be noted at this point that a general trend is appearing. On the whole, professors of teacher education feel it is very important for math and science teachers to be informed about the role of computers and to be able to use computers in instruction. They feel more strongly about these teachers than about any other group of teachers. Their schools currently offer training to these teachers more often than to any other group. However, the schools do not offer nearly enough training to produce a majority of math and science teachers who possess these desired computer skills.

Another trend is also beginning to take shape. The professors generally tend to place the most emphasis on the importance of computer skills and training for teachers at the secondary level. Junior high level teachers are next, and elementary level teachers have the least amount of emphasis placed on them in this regard.

Table VI-1 Computer Training Offered vs. Requirements

	Offered as Separate Course		Offered as Part of a Course	
	Required	Elective	Required	Elective
Elementary	--	11.0	3.9	3.9
Secondary math	12.6	22.0	11.0	3.9
Secondary science	3.9	22.0	7.9	6.3
Secondary Social studies	--	18.9	4.7	3.1
Secondary vocational education	--	8.7	3.1	1.6
Secondary business education	6.3	14.3	9.5	.8

This table indicates on every level of training, if a computer course is offered as a separate course, it is more often an elective. If, on the other hand, a computer course is offered as part of another course, it is more often required (except at the elementary level). This further accentuates the lack of strong emphasis in computer training for education majors at the undergraduate level.

About two-thirds (66.9 percent) of the professors indicated their students have the opportunity to work on computer terminals at least sometimes. However, only slightly more than one-fifth (22.8 percent) reported their students frequently have such opportunities.

Table VI-2 shows of those professors whose students have the opportunity to work on computer terminals frequently or sometimes, the importance of understanding the role of the computer in society for elementary teachers is split evenly between very important and somewhat important. For junior high and secondary teachers, the majority (63.5 percent for junior high and 80.0 percent for secondary) feel it is very important to understand the role of the computer. These results are not surprising, since the fact that a school is willing to provide computer terminals for its education students is an indication of the importance that school attaches to teachers being generally familiar with computers. Note, also, the increased emphasis at the secondary level.

Over four-fifths (85.8 percent) of the professors feel their institution will increase its emphasis on computer training for both graduates and undergraduates over the next five years. A total of 17.3 percent feel the emphasis will increase very much, while 68.5 percent feel it will increase somewhat. None of the professors feel the emphasis will decrease.

Table VI-2 Importance of Understanding Role of Computer vs. Opportunity to Work on Terminals

	Very Important				Somewhat Important				No Importance			
	Frequently	Some-times	Seldom	No	Frequently	Some-times	Seldom	No	Frequently	Some-times	Seldom	No
Elementary teachers	14.2	18.1	9.4	4.7	8.7	26.0	8.7	6.3	--	--	.8	--
Junior high teachers	17.3	25.2	11.6	5.5	5.5	18.9	7.1	5.5	--	--	--	--
Secondary teachers	21.3	32.3	12.6	7.9	1.6	11.8	6.3	3.1	--	--	--	--

Table VI-3 Importance of Ability to Use the Computer vs. Five Year Projection

	Elementary	Junior High Math	Junior High Science	Junior High Social Studies	Junior High Other	Secondary Math	Secondary Science	Secondary Social Studies	Secondary Vocational Education	Secondary Other
VERY IMPORTANT										
Increase very much	3.1	12.6	12.6	7.9	1.6	15.0	15.7	10.2	11.0	3.1
Increase some	8.7	39.4	34.6	12.6	7.1	58.3	54.3	26.8	29.9	6.3
No change	.8	5.5	5.5	3.9	.8	5.5	5.5	3.9	2.4	.8
Decrease some	--	--	--	--	--	--	--	--	--	--
Decrease very much	--	--	--	--	--	--	--	--	--	--
SOMEWHAT IMPORTANT										
Increase very much	12.6	3.9	3.9	8.7	3.1	1.6	.8	4.7	4.7	2.4
Increase some	43.3	27.6	31.6	46.5	14.2	10.2	13.4	37.8	30.7	7.9
No change	5.5	5.5	5.5	4.7	.8	5.5	6.3	4.7	4.7	1.6
Decrease some	--	--	--	--	--	--	--	--	--	--
Decrease very much	--	--	--	--	--	--	--	--	--	--
NO IMPORTANCE										
Increase very much	--	--	--	--	--	--	--	--	--	--
Increase some	15.0	1.6	2.4	7.9	3.1	--	.8	3.1	3.1	2.4
No change	5.5	1.6	1.6	3.9	.8	.8	--	3.1	.8	--
Decrease some	--	--	--	--	--	--	--	--	--	--
Decrease very much	--	--	--	--	--	--	--	--	--	--

From Table VI-3 it can be seen that in spite of the strong general feeling of increased computer emphasis in the next five years, if a professor attaches no importance to a teacher being able to use a computer for classroom instruction at even one teaching level or subject, that professor does not feel that emphasis on training students in the use of computers will increase very much.

Of those professors who feel the emphasis on computer training will increase somewhat or very much in the next five years, a majority (65.1 percent) feel it is only somewhat important for elementary teachers to be able to use a computer and most (64.2 percent) also feel that way about junior high social studies teachers. They split fairly evenly between somewhat important and very important for secondary social studies (49.5 to 43.1 percent) and vocational education teachers (41.3 to 47.7 percent). A strong majority feel the ability to use a computer is very important for junior high and secondary math (60.6 percent junior high, 85.3 percent secondary) and science (55.0 percent junior high, 81.7 percent secondary) teachers. Again, these observations are in keeping with the trends previously outlined.

Over half (54.0 percent) of the professors are familiar with available computer training materials. There are 2.4 percent who are satisfied with their quality, 16.7 percent who feel they need improvement, and 34.9 percent who are unsure of the materials' quality. Almost half (46.0 percent) are unfamiliar with the materials.

Table VI-4 Importance of Ability to Use the Computer vs. Knowledge of Available Training Materials

	Elementary	Junior High Math	Junior High Science	Junior High Social Studies	Junior High Other	Secondary Math	Secondary Science	Secondary Social Studies	Secondary Vocational Education	Secondary Other
VERY IMPORTANT										
Yes and satisfied	.8	1.6	1.6	.8	.8	2.4	2.4	2.4	1.6	--
Yes, materials need improvement	3.2	11.9	10.3	4.8	3.2	14.3	14.3	7.1	8.7	1.6
Yes, quality unknown	2.4	19.0	17.5	6.3	2.4	27.8	26.2	14.3	15.1	4.8
No	6.3	25.4	23.8	12.7	3.2	35.7	34.1	17.5	19.0	4.0
SOMEWHAT IMPORTANT										
Yes and satisfied	1.6	.8	.8	.8	.8	--	--	--	.8	.8
Yes, materials need improvement	11.1	4.0	5.6	10.3	2.4	1.6	1.6	7.9	5.6	1.6
Yes, quality unknown	23.0	13.5	15.1	23.0	7.9	5.6	7.9	18.3	13.5	5.6
No	26.2	19.0	19.8	25.4	7.1	9.5	10.3	21.4	20.6	4.0
NO IMPORTANCE										
Yes and satisfied	--	--	--	--	--	--	--	--	--	--
Yes, materials need improvement	1.6	--	--	.8	--	--	--	.8	.8	.8
Yes, quality unknown	7.9	1.6	1.6	4.8	.8	.8	--	1.6	.8	--
No	11.1	1.6	2.4	6.3	3.2	--	.8	4.0	2.4	1.6

Table VI-4 shows if a professor attaches no importance to a teacher being able to use a computer for classroom instruction at even one teaching level or subject, that professor also does not know about and feel satisfied with currently available training materials.

Of those professors who are aware of the quality of available training materials, more feel a teacher's ability to use the computer is very important than those who feel it is somewhat or not important. This is true at every teaching level and subject except at elementary and junior high social studies. For instance, at the junior high math level, 13.5 percent of the sample think ability to use the computer is very important and have made judgments on the quality of existing training materials. This contrasts with 4.8 percent of the sample who feel ability to use a computer has only somewhat or no importance and who have made judgments about the materials' quality. Table VI-4 illustrates a similar pattern at all levels except elementary and junior high social studies.

Over three-fourths of the professors (77.2 percent) are in departments which do not offer inservice courses in the use of computers for practicing teachers. There are 18.1 percent in departments which occasionally offer inservice training. These statistics are somewhat unusual in light of the strong feelings expressed earlier about teachers being familiar with computers.

VI-5 Importance of Ability to Use the Computer vs. Inservice Offered

	Elementary	Junior High Math	Junior High Science	Junior High Social Studies	Junior High Other	Secondary Math	Secondary Science	Secondary Social Studies	Secondary Vocational Education	Secondary Other
VERY IMPORTANT										
Frequent	.8	2.4	2.4	1.6	.8	2.4	3.1	3.1	2.4	1.6
Occasional	.8	13.4	11.8	3.9	.8	15.7	15.0	7.9	7.9	--
No	11.0	41.7	38.6	18.9	7.9	60.6	57.5	29.1	33.1	8.7
SOMEWHAT IMPORTANT										
Frequent	3.1	1.6	1.6	2.4	.8	1.6	.8	.8	.8	--
Occasional	12.6	3.1	4.7	11.8	3.9	1.6	2.4	8.7	8.7	2.4
No	44.9	32.3	34.6	44.9	13.4	14.2	17.3	38.6	30.7	9.4
NO IMPORTANCE										
Frequent	--	--	--	--	--	--	--	--	--	--
Occasional	3.9	.8	.8	1.6	--	--	--	.8	.8	.8
No	16.5	2.4	3.1	10.2	3.9	.8	.8	5.5	3.1	1.6

If a professor attaches no importance to a teacher being able to use a computer for classroom instruction at even one teaching level or subject, that professor is associated with an institution which does not provide inservice training on computers on a frequent basis. (See Table VI-5)

The table also shows those professors who feel it is very important for teachers to be able to use a computer provide inservice training by frequently or occasionally) for math and science teachers at both the junior high and secondary levels more than for any other group of teachers. In the sample 18.1 percent feel ability to use the computer is very important and also offer inservice training to secondary math and science teachers, as do 15.8 percent for junior high math and 14.2 percent for junior high science. This compares with the other levels and subjects from a high of 11.0 percent for secondary social studies teachers to a low of 1.6 percent for elementary, junior high other and secondary other.

Those professors who feel it is somewhat important for teachers to be able to use the computer provide inservice training to elementary and junior high social studies teachers more than to any other group. (In the sample 15.7 percent feel ability to use the computer is somewhat important and offer inservice training to elementary teachers, as do 14.2 percent for junior high social studies teachers. This compares with other levels and subjects from a high of 9.5 percent for secondary social studies and secondary vocational education teachers to a low of 2.4 percent for secondary other.)

The general emphasis on math and science teachers is evidenced in Table VI-5 among those professors who feel it is very important for teachers to be able to use a computer. However, instead of this emphasis being carried over to the professors who feel the ability to use the computer is somewhat important, a new pattern emerges. The professors who feel the ability for computer use is somewhat important emphasize elementary and junior high social studies teachers more than any other group. Earlier figures have shown elementary and junior high social studies teachers to be exceptions to the general trends, but this table is the first to pinpoint the situation.

Table VI-6 Knowledge of Available Training Materials vs. Inservice Offered

	Yes	No
Yes and satisfied	.8	1.6
Yes, materials need improvement	9.5	7.1
Yes, quality unknown	6.3	27.8
No	5.6	40.5

Table VI-6 shows of those professors who are at institutions which offer inservice training, significantly more (42.9 percent) feel available materials need improvement than those who are satisfied with their quality (3.6 percent).

Well over half (59.8 percent) of the sample are from schools with enrollments of 1,000 to 10,000. Twenty-two percent are from schools with under 1,000 students, 11.8 percent are from schools of 10,000 to 20,000 and 6.3 percent are in schools over 20,000.

Table VI-7 Enrollment vs. Computer Training Offered

	< 1,000			1,000-10,000			10,000-20,000			≥ 20,000		
	Not Offered	Separate Course	Part of Course	Not Offered	Separate Course	Part of Course	Not Offered	Separate Course	Part of Course	Not Offered	Separate Course	Part of Course
Elementary	12.6	3.1	3.9	36.2	7.1	3.9	7.1	1.6	.8	3.9	--	.8
Secondary math	9.4	7.1	3.9	18.1	25.2	7.9	4.7	5.5	.8	.8	1.6	3.1
Secondary science	11.0	3.9	5.5	22.8	17.3	8.7	3.9	3.9	2.4	2.4	1.6	1.6
Secondary social studies	13.4	2.4	3.1	29.9	13.4	3.9	5.5	2.4	1.6	3.1	1.6	--
Secondary vocational education	13.4	1.6	1.6	28.3	5.5	2.4	7.1	2.4	1.6	3.9	.8	--
Secondary business education	11.0	3.9	2.4	22.8	15.0	6.3	6.3	3.9	--	.8	1.6	2.4

As the table on the preceding page shows, on the whole, colleges of less than 1,000 and those of greater than 20,000 offer computer courses as separate courses as often as they offer them as parts of other courses. Colleges of 1,000 to 10,000, and 10,000 to 20,000 offer significantly more separate computer courses.

Colleges of all sizes offer computer training in some mode to secondary math and science students more often than no offering any kind of training. The single exception to this is secondary science students in colleges of less than 1,000. These observations are in keeping with the general trend.

Table VI-8 Enrollment vs. Familiarity with Available Training Materials

	< 1,000	1,000-10,000	10,000-20,000	≥ 20,000
Yes and satisfied	1.6	.8	--	--
Yes, materials need improvement	2.4	10.3	1.6	2.4
Yes, quality unknown	7.1	18.3	6.3	3.2
No	11.1	30.2	4.0	.8

Table VI-8 shows at colleges of every size, fewer professors (19.0 percent) are familiar with available materials and willing to make a judgment on their quality than those who would not judge the quality (81.0 percent) because they do not know about the quality or they do not know about the materials at all.

In colleges of 10,000 to 20,000 and those over 20,000, the majority is familiar with available materials regardless of their quality (66.7 percent and 87.5 percent respectively). In colleges of less than 1,000 and those of 1,000 to 10,000, almost exactly the same number of professors are familiar with available materials as those who are not.

Table VI-9 Enrollment vs. Inservice Offered

	< 1,000	1,000-10,000	10,000-20,000	≥ 20,000
Yes	2.4	11.8	3.9	3.9
No	19.7	47.2	7.9	2.4

The above table reveals that a majority (62.5 percent) of colleges of over 20,000 offer inservice training in computer use. In colleges of all other sizes, the majority does not offer inservice training (89.3 percent in schools less than 1,000, 78.9 percent in schools 1,000 to 10,000, 66.7 percent in schools 10,000 to 20,000).

The three preceding tables all evidence the fact that larger schools are more familiar with and more committed to the use of computers in the education curriculum than are smaller schools. Large schools offer more computer courses for their students, offer more inservice training for teachers already in the field, and are more aware of current literature in the field. In general, this awareness of and commitment to computers increases as school size increases.

SURVEY OF SECONDARY EDUCATION TEACHERS

This survey is designed to obtain teachers' professional advice concerning the needs of teachers in understanding how the computer can be used as an aid to instruction. The information gained is most important for creating appropriate teacher training materials.

1. Which of the following best describes the skill that a teacher in your field should have with computers? (Check any that apply)

   - ○ Ability to use prepackaged programs for simulations and problem solving in instruction 64%
   - ○ Understanding of the workings of computer hardware (equipment needed, capabilities, etc.) 37%
   - ○ Understanding of the social impact and importance of the computer 44%
   - ○ Other (please specify) _____ 7%
   - ○ None 2%

2. Have you ever received training on how to use the computer in instruction? (Check any that apply)

   - ○ Yes, in a college course 22%
   - ○ Yes, in inservice training 14%
   - ○ Yes, by informal reading and/or experience 17%
   - ○ Yes, other (please specify) 4%
   - ○ No, I have had no training 61%

3. Would you consider it useful for your teaching practice to receive more training in the use of the computer in instruction?

   - ○ Yes, in a college or university course 16%
   - ○ Yes, in a district or local inservice program 56%
   - ○ No, because _____ 13%

4. In which of the following areas would you like more training in the use of computers in instruction? (Check any that apply)

   - ○ Understanding of the social impact and importance of the computer 35%
   - ○ Understanding of the workings of computer hardware (equipment needed, capabilities, etc.) 38%
   - ○ Ability to use programs for simulation and problem solving for instruction 71%
   - ○ Other (please specify) _____ 4%
   - ○ None 6%

5. Do you know of any materials for the training of teachers in the above computer instructional categories?

   - ○ Yes, and I am satisfied with the quality 2%
   - ○ Yes, but the materials need improvement 8%
   - ○ Yes, but I don't know their quality 15%
   - ○ No 72%

6. If you would be interested in inservice training (one or two days) for the use of the computer in instruction, when would you prefer it?

   - ○ Before school opens in the fall 32%
   - ○ During the school year 54%
   - ○ At the conclusion of the school year 5%
   - ○ Not interested 7%

(continued on reverse side)

7. What is the accessibility of a computer terminal for your instructional use?

15% ○ Very accessible (in school) 31% ○ Somewhat accessible (in or near school) 51% ○ Little or no accessibility (neither in nor near school)

8. If your school does not presently provide for teacher access to computer terminals for instructional purposes, what are the plans for the future?

○ Plans to provide computer terminals for teachers 3%

○ Possibly will provide computer terminals for teachers 9%

○ Definitely is not interested in providing computer terminals for teachers 10%

○ I don't know the school's plans 64%

9. If computers are used in instruction at your school, estimate the percentage of teachers in your school who use them in their instructional programs.

48% ○ Fewer than 10% 10% ○ 10% to 25% 4% ○ 25% to 50% 1% ○ More than 50%

10. Which of the following topics about computers do you include in any of your students' courses? (Check any that apply)

○ Role of the computer in modern society 35%

○ Elements of computer science 12%

○ Computer language (FORTRAN, BASIC, etc.) instruction 20%

○ Solution of problems with the assistance of the computer 23%

○ Other (specify) _____ 6%

_____

○ None 40%

11. In what state is your school district located?

12. What is the size of the high school in which you teach?

46% ○ Less than 1,000 23% ○ 1,000 to 1,500 25% ○ 1,500 to 2,500 4% ○ Over 2,500

13. What is your principal area of instruction?

55% ○ Mathematics 2% ○ Science 34% ○ Social Studies 8% ○ Other (please specify)

_____

14. Circle those grade levels you teach.

27% 7 29% 8 47% 9 48% 10 50% 11 50% 12

Thank you again for your assistance. If you wish for us to remain in contact with you after the final development of the materials, fill in your name and address below.

Name _____ Title _____

Institution _____

Business Address _____

If you have any further comments that you feel would help us in the development of useful training materials in this area, please feel free to include them. They are much appreciated.

Return in enclosed postage-paid envelope to:

Office of Marketing and Dissemination
Northwest Regional Educational Laboratory
710 S. W. Second Avenue
Portland, Oregon 97204

Teachers

A majority of teachers (63.8 percent of the sample) feel the ability to use prepackaged programs for simulations and problem solving is a skill a teacher should have. Less than half (43.7 percent) feel teachers should have an understanding of the social impact and importance of the computer. About one-third (36.9 percent) feel they should have an understanding of computer hardware. Only 2.3 percent feel a teacher should have no computer skills.

The majority of teachers in the sample (60.6 percent) have had no computer training. About one-fifth (21.5 percent) received training in a college course. Even fewer received training through inservice (13.8 percent) or informal reading and/or experience (16.6 percent).

Over half the teachers (56.2 percent) feel it would be useful to receive more training in a district or local inservice program. Only 16.2 percent would like to receive more training at a college or university and 13.1 percent do not feel it would be useful to receive more training. A strong majority of teachers (70.4 percent) would like training in the use of programs for simulation and problem solving. More than one-third would like more training in understanding the workings of computer hardware (37.1 percent) and in understanding the social impact and importance of the computer (34.8 percent). Only 6.3 percent would not like more training. Note that the distribution in demand for more training parallels the distribution of computer skills judged desirable for teachers to possess. In both cases, the major emphasis is on simulation and problem solving.

Table VI-10 Skills Teachers Should Have vs.
Areas for More Training

	Use Programs for Simulation	Understand Hardware	Understand Social Impact	Other
Use programs for simulation	54.7			5.1
Understand hardware		25.8		3.0
Understand social impact			26.9	1.9
Other				1.2

Over half (54.7 percent) of the sample feel the ability to use pre-packaged programs for simulation is both a skill which a teacher should have and an area in which they would like further training. One fourth (25.8 percent) of the sample feel that way about understanding computer hardware. One fourth (26.9 percent) of the sample feel that way about understanding the social impact of the computer. Table VI-10 also reflects the importance of simulation and problem solving as a computer skill.

One fourth of the teachers (25.9 percent) are familiar with available training materials. Only 2.3 percent are satisfied with their quality, 8.4 percent feel improvement is necessary, and 15.2 percent are not familiar with the quality of the materials. The great majority (72.4 percent) are not even familiar with the available materials. These statistics show that concerning training materials, teachers as a group are the most uninformed of all the five samples.

The majority of teachers (54.1 percent) would prefer inservice training to take place during the school year. About one third of them (31.8 percent) prefer it to take place in the fall before school opens. A consistent 6.8 percent are not interested.

Half of the sample (50.4 percent) reported they have little or no accessibility to a computer terminal for instructional use. About one third (31.5 percent) reported they have computer terminals for instructional use in or near their school. Only 14.6 percent reported they have terminals in their school.

The majority in the sample (63.6 percent) do not know their school's plans regrading the provision of computer terminals for instructional purposes. About the same number of teachers (9.9 percent) indicated their school is definitely not interested in providing terminals as those who indicated their school will definitely or possibly provide terminals (11.0 percent).

About half of the teachers (48.1 percent) estimate fewer than 10 percent of the teachers in their school use computers in their instructional program. Over one third (36.9 percent) did not provide any information in this area. Only 4.9 percent estimate over 25 percent of the teachers in their school currently use the computer.

Table VI-11 Accessibility of Terminals vs. Percentage of Teachers Using Computers

	< 10 Percent	10-25 Percent	25-50 Percent	> 50 Percent
Very or somewhat accessible	27.9	7.2	2.1	.9
Little or no accessibility	19.7	2.8	1.9	--

Of those teachers who have computer terminals for instructional use available in or near their school, the majority of teachers (69.4 percent in school, 56.7 percent near school) estimate fewer than 10 percent of the teachers in their school use the computer. The table above points out that lack of accessible computer terminals is not the only reason for the small amount of usage in classroom instruction.

The majority of teachers in the sample teach at least one computer topic to their students. Over one third (35.3 percent) include the role of the computer in modern society in courses they teach. Almost one fourth (23.4 percent) include the solution of problems with the assistance of the computer. Computer language instruction is taught by 19.6 percent of the teachers and 11.9 percent teach elements of computer science in their courses. The remaining 40.4 percent of the sample do not teach any computer topics to their students.

Nearly half (45.8 percent) of the sample teach in schools with enrollments of under 1,000 students, and nearly one fourth are in schools of 1,500-2,500 (24.5 percent) and in schools of 1,000-1,500 (23.4 percent).

Only 4.2 percent are from schools over 2,500.

Table VI-12 Enrollment vs. Have Training

	< 1,000	1,000-1,500	1,500-2,500	> 2,500
Yes, in college course	6.3	6.8	6.8	1.2
Yes, inservice	4.0	3.7	4.4	1.4
Yes, experience	6.5	5.1	4.0	.9
Yes, other	1.6	.7	1.2	--
No training	32.2	12.2	13.6	1.6

In schools of all sizes, (except those under 1,000) more teachers received their computer training in college courses than by any other method. In schools under 1,000, more teachers received their training by informal reading and/or experience. Table VI-12 also shows that as school size increases, the percentage of teachers with no computer training decreases (70.6 percent in schools less than 1,000, 52.0 percent in schools 1,000-1,500, 55.2 percent in schools 1,500-2,500, 38.9 percent in schools greater than 25,000). This is in keeping with the trend found in the other samples that larger schools are more aware of and prepared for computer use than smaller schools.

Table VI-13 Enrollment vs. Accessibility of Terminals

	< 1,000	1,000-1,500	1,500-2,500	> 2,500
Very accessible	2.8	3.5	7.3	.9
Somewhat accessible	14.1	8.7	6.8	1.6
Little or no accessibility	28.1	10.3	9.4	1.6

Table VI-13 on the preceding page shows in schools over 1,000, the majority of teachers have terminals in or near the school (52.0 percent in schools 1,000-1,500, 57.7 percent in schools 1,500-2,500, and 61.1 percent in schools over 2,500). In schools under 1,000, the majority of teachers (61.2 percent) had little or no access to a terminal. This, too, is in keeping with the general trend.

Table VI-14 Enrollment vs. Percentage of Teachers Using Computers

	< 1,000	1,000-1,500	1,500-2,500	> 2,500
Less than 10 percent	17.1	14.5	12.9	3.3
10 to 25 percent	3.3	3.0	3.0	.5
25 to 50 percent	3.0	.7	.7	--
Greater than 50 percent	.7	--	.2	--

The table indicates in schools over 1,000 students, the majority of teachers estimate that less than 10 percent of the teachers in their school use the computer for instruction (62.0 percent from 1,000-1,500, 52.4 percent from 1,500-2,500, 77.8 percent from greater than 2,500). Of those who estimate over 25 percent of the teachers in their school use the computer for instruction, a majority (76.5 percent in the 25-50 percent range and 75.0 percent in the greater than 50 percent range) are in schools of less than 1,000. These observations are contrary to the general trend, and somewhat unusual. While Table VI-13 asserts that more teachers in big schools have better access to computer terminals, Table VI-14 states that more teachers in small schools actually use the computer in their classroom instruction than do those in large schools.

Over half (54.7 percent) of the sample are math teachers. Another third (34.1 percent) are social studies teachers. Only 2.1 percent are science teachers. Because of the small number of science teachers in the sample, no analysis of them will be made.

Table VI-15 Subject Taught vs. Skills Teachers Should Have

	Math	Science	Social Studies	Other
Use pre-packaged programs for simulation	39.7	.9	18.2	4.7
Understand hardware	26.2	1.2	7.2	2.3
Understand the social impact	22.4	1.2	16.8	3.3
Other	6.1	.2	.7	.2
None	.5	.2	1.6	--

As Table VI-15 indicates, math teachers feel the order of importance of desirable computer skills (descending) is: use pre-packaged programs for simulation, understand hardware, understand the social impact of the computer. Social studies teachers feel the order of importance is: use of pre-packaged programs for simulation, understanding the social impact of the computer, understanding hardware. Note that math teachers feel understanding computer hardware is more important than understanding the computer's social impact. This differs from the attitude of the sample as a whole.

Table VI-16 Subject Taught vs. Have Training

	Math	Science	Social Studies	Other
Yes, college course	18.2	.5	1.2	1.4
Yes, inservice	11.4	.2	.7	1.4
Yes, experience	12.9	.7	1.4	1.6
Yes, other	2.1	--	1.4	--
No training	23.7	1.2	30.0	5.6

Table VI-16 shows more math teachers received computer training in college courses than by any other method, whereas more social studies teachers received their training from informal reading and/or experience than by any other method. The majority of math teachers (56.5 percent) have had some kind of training in computers while the majority of social studies teachers (87.7 percent) have had no training.

Table VI-17 Subject Taught vs. Areas for More Training

	Math	Science	Social Studies	Other
Understand social impact	15.2	.7	16.1	2.8
Understand hardware	25.1	.9	9.6	2.8
Use programs for simulation	42.3	1.6	21.5	5.6
Other	3.0	.2	.2	.5
None	2.3	--	3.5	.5

According to the table above, math teachers feel the order of desirability (descending) of additional training in computer skills is: use of programs for simulation, understanding hardware, understanding social impact. Social studies teachers feel that the order of desirability (descending) of additional training in computer skills is: use of programs for simulation, understanding social impact, understanding hardware. For both sets of teachers, the order of

the areas in which they would like further training parallels the order of the areas of training which they feel teachers should have.

Table VI-18 Subject Taught vs. Knowledge of Available Training Materials

	Math	Science	Social Studies	Other
Yes and satisfied	1.9	--	.5	--
Yes, materials need improvement	7.5	--	.2	.7
Yes, quality unknown	11.2	.5	1.6	1.6
No	33.2	1.6	31.8	5.8

Table VI-18 indicates both the majority of math teachers (60.7 percent) and the majority of social studies teachers (93.2 percent) are not familiar with available computer training materials. Of those math teachers willing to make a judgment on the quality of training materials, 80.0 percent feel improvement is necessary. The majority of social studies teachers willing to make a judgment (66.7 percent) are satisfied with their quality.

Table VI-19 Subject Taught vs. Accessibility of Terminals

	Math	Science	Social Studies	Other
Very accessible	10.5	.2	2.8	.9
Somewhat accessible	18.5	.5	10.3	2.1
Little or no accessibility	24.4	1.4	19.7	5.2

The preceding table shows slightly over half (53.0 percent) of math teachers have a computer terminals for instructional use which is either very or somewhat accessible. The majority of social studies (57.9 percent) teachers have little or no access to a terminal.

Table VI-20 Subject Taught vs. Computer Topics Taught

	Math	Science	Social Studies	Other
Role of computer	20.6	.7	11.2	2.8
Elements of computer science	10.3	.2	.7	.7
Computer language	18.0	.2	.5	.9
Problem solving	18.0	.7	3.0	1.6
Other	4.9	.2	1.2	.2
None	18.0	.7	18.2	3.5

As illustrated above, the order of frequency (descending) for topics taught by math teachers is: role of the computer, computer languages and problem solving (tie), elements of computer science. The order of frequency for social studies teachers is: role of the computer, problem solving, elements of computer science, computer languages. The majority of math teachers teach at least one topic about computers (67.1 percent) but the majority of social studies teachers (53.4 percent) do not teach any computer topic.

The preceding tables point out some characteristics of the math teachers which distinguish them from the social studies teachers. The math teachers are more technically oriented in their approach to computer use, have more training, have more opportunity to use terminals, and teach more computer topics than do social studies teachers.

The distribution of teachers among grade levels is as follows: 26.9 percent teach at the 7th grade level, 28.7 percent teach at the 8th grade level, 46.8 percent teach at the 9th grade level, 47.4 percent teach at the 10th grade level, 50.5 percent teach at the 11th grade level, and 49.5 percent teach at the 12th grade level. No significant differences were found in the

computer topics taught at the various grade levels, as Table VI-21 indicates.

Table VI-21 Grade Level vs. Computer Topics Taught

	7	8	9	10	11	12
Role of computer	10.0	9.8	17.6	17.5	18.7	18.7
Elements of computer science	2.1	1.9	5.4	7.9	8.9	8.4
Computer language	2.6	3.0	10.3	13.1	14.0	12.6
Problem solving	4.4	4.9	11.7	13.3	15.2	14.0
Other	1.6	1.6	3.7	3.5	3.5	3.5
None	11.9	13.3	17.8	16.8	18.2	18.9

SURVEY OF SCHOOL DISTRICT SUPERINTENDENTS

This survey is designed to obtain professional advice concerning needs in two areas: (1) school administrators' knowledge of computer assisted data management and decision making, and (2) teacher understanding of the use of the computer as an aid to instruction. The information gained is most important for developing appropriate training materials.

ADMINISTRATOR NEEDS

1. Please indicate the number of each kind of administrator you have in your district and check how desirable it is that they have training in computer assisted management and decision making.

Number	Very desirable	Somewhat desirable	Not needed
_____ Elementary	☐ 20%	☐ 53%	☐ 17%
_____ Junior high	☐ 30%	☐ 48%	☐ 5%
_____ Secondary	☐ 51%	☐ 35%	☐ 3%
_____ Central office	☐ 63%	☐ 26%	☐ 2%

2. How many administrators in each category do you estimate now have this training?

	Less than 10%	10% to 25%	25% to 50%	More than 50%
Elementary	☐ 82%	☐ 10%	☐ 2%	☐ 2%
Junior high	☐ 62%	☐ 14%	☐ 8%	☐ 4%
Secondary	☐ 52%	☐ 18%	☐ 13%	☐ 9%
Central office	☐ 40%	☐ 24%	☐ 20%	☐ 12%

3. Five years from now at what level do you estimate administrators in your district will be using computers for planning and management?

☐ 33% Much more than now ☐ 52% Somewhat more than now ☐ 14% About the same ☐ Somewhat less than now ☐ Much less than now

4. Would you prefer that administrators presently working for your district acquire their computer training in workshops in the district or get it at a college or university?

☐ 64% Workshops in the district ☐ 6% At a college or university ☐ 30% No preference

5. If you were to offer a workshop for administrators to obtain training in computer assisted data management and decision making, when would you prefer to hold it?

☐ 17% Fall ☐ 25% Winter ☐ 12% Spring ☐ 54% Summer

6. Do you know of training materials for school administrators in computer assisted data management and decision making which are currently available?

☐ 5% Yes, and the quality is satisfactory ☐ 33% Yes, but I don't know their quality ☐ 7% Yes, but the materials need improvement ☐ 54% No

7. Is there currently a person in your district who could assist in inservice training of administrators if he or she had economical and efficient materials to use?

☐ 55% Yes ☐ 41% No ☐ 2% We plan to employ such a person

8. Does your school district have or plan to obtain access to a computer terminal for instructional and management purposes?

	Presently have	Plan to obtain	No plans to obtain
For management	☐ 49%	☐ 19%	☐ 27%
For instruction	☐ 50%	☐ 15%	☐ 30%

(continued on reverse side)

9. If your district would budget money for an instructor, materials, and computer access for the training of present administrators in management and decision making techniques, approximately how much per participating administrator would be budgeted annually?

☐ 36% Less than $100 ☐ 32% $100 to $250 ☐ 8% More than $250 ☐ 14% None

TEACHER NEEDS

10. Do your secondary teachers currently use a computer terminal for classroom instruction?

	Always	Occasionally	No, but plan to add	No, and not in near future
Science teachers	☐ 3%	☐ 29%	☐ 11%	☐ 40%
Math teachers	☐ 13%	☐ 41%	☐ 10%	☐ 29%
Social science teachers	☐ .5%	☐ 14%	☐ 10%	☐ 51%
Other _____	☐ 4%	☐ 13%	☐ 4%	☐ 25%

11. In five years what role would you expect computers to play in classroom instruction?

☐ 21% Much more important than now ☐ 56% Somewhat more than now ☐ 18% About the same as now ☐ .2% Less than now ☐ 2.5% None at all

12. If your teachers were to receive training on how to use the computer in instruction, where should they get it?

☐ 67% Inservice training within the school district ☐ 25% At a college or university ☐ 4% Neither; the training is not needed ☐ 2% Other (please specify) _____

13. If you had economical and efficient materials for training teachers in the instructional use of computers, would you offer inservice training?

☐ 75% Yes ☐ 20% No (If no, why?) _____

14. When would you offer such inservice training to teachers? (Check all that apply)

☐ 42% Fall ☐ 40% Winter ☐ 32% Spring ☐ 40% Summer

15. Do you know of materials for training teachers in the instructional use of computers?

☐ 7% Yes, and they are satisfactory ☐ 10% Yes, but they need improvement ☐ 27% Yes, but I don't know their quality ☐ 52% No

16. If your district budgeted money for instructor, materials, and computer access for training teachers in the use of computers, how much per participating teacher would be budgeted annually?

☐ 44% Less than $75 ☐ 18% $75 to $150 ☐ 8% More than $150 ☐ 18% None

17. Indicate the student enrollment of your school district.

☐ 34% 2,500 to 4,999 ☐ 32% 5,000 to 9,999 ☐ 22% 10,000 to 24,999 ☐ 11% 25,000 or more

18. In what state is your school district located? _____

Thank you again for your assistance. If you wish for us to remain in contact with you after the final development of the materials, fill in your name and address below.

Name _____ Title _____

Institution _____

Business Address _____

If you have any further comments that you feel would help us in the development of useful training materials, please feel free to include them. They are much appreciated.

Return in enclosed postage-paid envelope to: Office of Marketing and Dissemination, Northwest Regional Educational Laboratory, 710 S. W. Second Avenue, Portland, Oregon 97204. 79

Superintendents--Teacher Needs

The superintendents reported their math teachers currently use computer terminals for classroom instruction more than any other group of teachers (12.8 percent use them always, 40.9 percent use them occasionally). The next group is the science teachers (2.5 percent use them always, 28.5 percent use them occasionally). Social science teachers use terminals the least according to the superintendents, with .5 percent using them always and 14.0 percent using them occasionally. The superintendents also feel the social science teachers are the least likely group to begin using terminals. Half the sample (50.6 percent) feels this way compared to 40.1 percent who feel this way about science teachers and 28.6 percent who feel this way about math teachers.

Over three-fourths of the superintendents (77.2 percent) feel in five years the computer will play a more important role in classroom instruction than it does now. About half (56.3 percent) feel the role will be somewhat more important and 20.9 percent feel it will be much more important. Only 2.7 percent feel the computer will have less of a role than now or no role at all.

Two-thirds of the superintendents (66.7 percent) feel if their teachers were to get more computer training, they should get it at inservice training within the district. Another quarter of them (24.9 percent) would like their teachers to be trained at a college.

Three-fourths of the sample (75.1 percent) indicated they would offer inservice training within the school district for teachers if they had economical and efficient materials, and 20.0 percent would not offer training.

Table VI-22 Where Training Preferred vs. Offer Inservice

	Inservice Within District	College Course	Neither	Other
Yes	56.1	16.1	.5	1.6
No	8.6	7.8	2.9	.3

The majority (56.1 percent) of the sample prefer inservice training within the school district for their teachers and would offer it if they had economic and efficient materials. Table VI-22 reinforces the favorable general response to the question of offering inservice training to teachers.

No clear preference emerged as to when the superintendents would offer inservice training to teachers. About the same number would offer it in the fall (41.8 percent) as those who would offer it in the summer (38.9 percent) or winter (38.6 percent). Slightly fewer superintendents (31.5 percent) would offer it in the spring.

Table VI-23 Offer Inservice vs. When Inservice Offered

	Yes	No
Fall	38.4	3.0
Winter	35.0	3.5
Spring	28.7	2.5
Summer	33.0	5.3

According to Table VI-23, of those who would offer inservice training for their teachers if they had appropriate materials, the order of frequency for the time of inservice offered is: fall (38.4 percent), winter (35.0 percent), summer (33.0 percent), spring (28.7 percent). These figures reflect the general pattern established for the entire sample.

Less than half (44.6 percent) of the superintendents are familiar with available training materials for teachers. Only 7.9 percent are satisfied with their quality, 10.0 percent feel improvement is necessary, and 26.7 percent are unsure of their quality. Half (51.3 percent) are unfamiliar with available materials. The superintendents are equally uninformed about available computer training materials for administrative functions.

Table VI-24 Offer Inservice vs. Knowledge of Available Training Materials

	Yes	No
Yes, and satisfied	5.5	1.2
Yes but improvement needed	9.7	.5
Yes and don't know	22.2	3.0
No	36.7	14.0

As Table VI-24 indicates, of those who would offer inservice training for their teachers if they had the appropriate materials, only about half (49.7 percent) are familiar with available materials. Of those who would not offer inservice training, the majority (70.9 percent) are not familiar with available materials, which is to be expected.

In general, the superintendents are unwilling to budget much money to train their teachers in the use of computers. Less than one-half (44.6 percent) would budget less than $75 per teacher for computer training, and 18.3 percent would budget $75-$150 per teacher. Nearly as many (17.5 percent) would not budget any money to train their teachers. The superintendents are somewhat more generous when budgeting money for training their administrators.

Table VI-25 Offer Inservice vs. Dollars Budgeted for Training

	Yes	No
Less than $75	37.6	4.8
$75 to $150	15.8	1.8
Greater than $150	7.3	.8
None	8.0	9.3

The above table indicates of those who would offer inservice training for their teachers, half (50.0 percent) would budget less than $75 per teacher. Over one-fifth (21.0 percent) would budget $75-150; one tenth (10.7 percent) would budget no money. This represents a slight improvement over the distribution in the sample as a whole. However, this is to be expected since those who are not interested in offering inservice training for their teachers are also the most likely to budget no money for training.

About one-third of the superintendents (36.4 percent) are in school districts of 2,500-4,999, and another third (32.1 percent) are in districts of 5,000-9,999. Districts of 10,000-24,999 make up 21.3 percent of the sample and the remaining 10.5 percent are districts over 25,000.

Table VI-26 Enrollment vs. Knowledge of Available Training Materials

	2,500–4,999	5,000–9,999	10,000–24,999	≥ 25,000
Familiar with materials	13.7	15.5	8.7	6.6
Not familiar	19.4	16.2	12.3	3.4

Table VI-26 illustrates that in districts of more than 25,000, the majority (62.8 percent) is familiar with available training materials. In districts of less than 25,000, the majority is not familiar with available materials (56.0 percent, 2,500–4,999; 50.8 percent, 5,000–9,999; 57.5 percent, 10,000–24,999). This is in keeping with the general trend evidenced in the other samples that larger school districts and schools tend to be more aware of computers than smaller districts and schools.

VII. CONCLUSIONS AND IMPLICATIONS

The following conclusions and implications are tentative and subject to those limitations brought out in the final section. The conclusions are derived from this particular research study, and the implications represent attempts to generalize from those conclusions.

The first portion herein will deal with Data Management and Decision Making, second will be Selecting and Specifying Computer-Enhanced Units. Throughout both sections--as conclusions and implications are drawn--reference will be made to those marketing questions outlined in section II; Purposes of the Market Survey. The questions express a concern for: Is there a market? Who is the market? What is the size of the market (user audience)? And so forth.

Data Management and Decision Making

Market(s)

Based on the responses from those audiences surveyed, there does appear to exist a number of sizeable markets (or user audiences) for this product. Primary among these audiences will be 1) professors of educational administration (post-secondary, graduate level); 2) professors of business administration (post-secondary, undergraduate and graduate levels); and 3) superintendents of large school districts (elementary and secondary levels).

Secondary markets (user audiences) for the product appear to be:

1. Superintendents of medium and small school districts
2. Libraries (elementary, secondary, post-secondary, and special)
3. Private industry (especially among computer and/or technology-oriented companies such as Tektronix, Digital Equipment Corporation, and Hewlett-Packard)
4. Other educational departments (such as is health and the sciences)
5. Various governmental agencies (city, state, regional and national)

With respect to responses from the various audiences surveyed, it is evident that professors of educational administration rate extremely high as a primary target. Over 94 percent of the respondents from this group feel the use of the computer is important in educational administration. Over 90 percent feel the computer will increase over the next five years. And perhaps most impressive in terms of product need and acceptance within this group is the fact that only 4 percent of the respondents are both aware of computer teaching materials for their students and also satisfied with their quality. All this implies an interest in and need for instructional materials for students in educational administration, but a definite lack of satisfaction with currently available products. This kind of general trend holds true for professors of business administration and school district superintendents.

It is important to note among the perceived primary markets the current (and anticipated) use of the computer technology training materials for inservice courses. Among the professors of educational administration,

only 38 percent of the respondents report the availability of such training for practicing administrators; 25 percent among professors of business administration. It follows (based on the high interest level in and expectations for computer use) that inservice capability will expand, both on the college campus (where access to computer terminals is high) and in the school district itself (where most superintendents desire their administrators receive their training).

Product Mix

The currently planned mix of instructional materials within Data Management and Decision Making appears to be reasonably in line with those areas currently offered by the various respondents. Operations research introduction rates highest among all audiences surveyed. Professors of educational administration express about equal interest in linear programming computer simulation, and PERT/CPM. Queueing theory, within this group, has relatively small interest (11 percent). Among professors of business administration, (following operations research), linear programming, PERT/CPM, queueing theory and computer simulation follow in respective order of current offerings.

It should be noted that while professors of business administration currently utilize all five instructional methods in the training of their students, it is thought that this category of users probably is far more advanced in computer training in general than are other potential markets. This causes some concern with the product developers, at least from the point of view of meeting the more indepth training needs of this group with

currently planned products. Accordingly, it would seem prudent to consider professors of business administration as a "low" primary market, using the rationale that enough of these users will still find the techniques within Data Management and Decision Making useful to allow continued identification as a primary market.

Based on known usage patterns by the identified markets, it is anticipated that the various pieces of the product mix will be formatted into one bound document, probably designed in manual style for ease of use and production economies. The final design will be decided during development; but five separately bound pieces does not currently appear to be the best production and usage approach.

In addition to the student materials, it is the intent of the developers to provide both program listings and an instructor supplement for teacher use. The final design of these particular materials will occur during continued development.

Communication

Those techniques to be initiated by the publisher of Data Management and Decision Making to communicate the availability of the product will be designed to 1) build awareness of and, 2) gain commitment to the product, and 3) to achieve final purchase and use.

Based on the unusually high response rate (over 20 percent) to this kind of survey, along with perceived decision-making patterns within the primary and secondary markets, it is suggested that direct mail to targeted buyers, users and linkage agencies will be instrumental in achieving

acceptance and use of the product. The respondents (from the accompanying letter and questionnaire) were able to grasp the concept of this in-development material. Accordingly, a well conceived message communicated via direct mail should have even greater impact on user awareness and response to purchase and use.

In addition to direct mail, communication to targeted markets should be best accomplished through the following strategies:

- Preparation of descriptive product/program literature to use as handouts, direct mail and for display.
- Submission of product press releases to journals, associations, through existing education and non-education networks.
- Submission of articles for publication in targeted user-read professional journals and newsletters.
- Conference participation to exhibit products (such as at NAUCAL Conference, Portland, Oregon in October 1976).
- Placement of print ads in targeted user-read publications (local and national professional journals and newsletters)
- Exposure on educational television and radio.
- ERIC (Educational Resources Information Center)

It would seem advisable that, whatever the communication strategy used, a clear and systematic linkage be presented between 1) each piece of Data Management and Decision Making and 2) Data Management and Decision Making and Selecting and Specifying Computer-Enhanced Units. While the user audiences and problems of use may vary here and there, the cohesive interrelated nature of the products and users can be taken advantage of via

promotional messages that link all sectors (products and user) together. While an administrator may not use Selecting, he or she can certainly play the role of a "linker" to recommend such use to a teacher. Accordingly, promotional messages must be designed so the listener/reader has the opportunity to share such opinions/impressions with other potential users. Repetition of similar messages will be vital as well to gaining final purchase and use of the products; these messages being well timed and written specifically for each user audience.

Distribution Mix

The Laboratory, as intended publisher of Data Management and Decision Making, will normally perform all the selling and dissemination tasks (including product packaging and formatting, promotion, pricing, receiving of orders, shipping of materials, and accounting needs).

The survey would indicate the probable existence of a number of markets (user audiences) for the product. This, in itself will dictate the conditions under which the product will be used, thus carrying over to the buyers' and users' perceptions of the product. For example, practicing administrators will participate in inservice training, perhaps after normal school hours or during off season (summer) periods.

This inservice training, using Data Management and Decision Making, can be most productive--and provide a good image of the product--if a skilled trainer performs the instruction tasks. It will be important that publisher messages leading to sale and use make it quite clear as to the skill level expected of the instructor. Otherwise, an unfavorable image of the product

could unfortunately result. Also, inservice training on a college campus may be more available and/or perceived as more professional than within the school district itself. These factors must be considered and dealt with relative to promotion and use of the product, especially in light of the response from school district superintendents that they favor in-district workshops over training at a college (64 percent to 6 percent) and the seemingly low availability of inservice courses at colleges.

With regard to the accessibility students have to computer terminals, only 5 percent of professors of educational administration report no accessibility; 12 percent of the professors of business administration report no accessibility. Among school district superintendents, 68 percent report that they presently have or plan to obtain a computer terminal for management purposes. All this data apparently shows 1) a high availability of necessary terminals for instruction and management purposes, and 2) a high commitment to the computer for both training in and actual application of management techniques utilizing the computer.

A clear cut trend is reported by the respondents regarding seasonal concerns for workshops for school district administrators. Fifty four percent prefer that their administrators obtain such training in the summer; 25 percent in the winter. Fall and spring rate low in desired times for computer instruction vis workshops, probably due to the usually high levels of work related to both beginning and ending a school year. Accordingly, this information should provide guidance relative to peak periods for promotion for anticipated use (promoting to school districts for expected inservice use of products during the apparently desired summer months).

Also a clear cut opinion is reported by the respondents regarding expected annual budgets per participating school district administrator in computer inservice training. Eight percent of the respondents indicate that more than $250 per participant would be allocated for such training; another 32 percent report that $100 to $250 would be budgeted. And while 36 percent of the respondents indicate they would budget less than $100, even this infers a commitment at some level to inservice training for their administrative personnel.

Limitations of Present Data

Time certainly must be viewed as presenting several limitations to the present study. For example, the survey (out of necessity) was conducted under an extremely rigid time schedule. Limited planning, preparation, execution and data reduction time was available. Even the personal letter sent with each questionnaire expressed a request for a quick response. While the outcomes of the survey are now viewed as being most productive and helpful, it must be recognized that more time in all areas might have provided findings, not to refute our current marketing information, but rather to provide more useful data.

Also, the time of the year was viewed as detrimental to more indepth input. The survey instruments were mailed to the sample in early July, right in the middle of summer vacations for the great majority of most intended respondents. It can be reasonably assumed that the response rate for all

groups would have been higher during the school year, as the Laboratory has received a high number of questionnaires from respondents after the cut off date, many carrying expressions of apology for not responding sooner because of vacations and other time-related reasons.

Audience is viewed in retrospect as a limitation to useful indepth data. While those target user audiences surveyed were and are still perceived to be the prime markets for Data Management and Decision Making, it would also have been useful to survey a number of other potential users. For example, input from less-than-large school districts, libraries, private industry, other post-secondary education departments and governmental agencies would have provided additional direction relative to marketing the product to those groups. Also, an evaluation of the perceived linkage agencies would have been valuable.

A more indepth evaluation of regional aspects of the marketing and use of these computer materials might have been helpful. One can speculate that certain trends may exist, perhaps from state to state as well as within states, that would give direction relative to the interest in and need for such materials. However, a preliminary investigation produced no significant trends and no useful data from a marketing perspective. Therefore this national survey must stand as respresentative of respondent input on a total nationwide basis.

The availability of product design input would have been helpful from a developmental point of view. It was considered, at the time of questionnaire design, to probe in the area of desired product formatting. However, in the interest of conserving space, this was eliminated. This was, in retrospect,

a proper decision. However, user input on desired product design (for example, one bound piece versus five separate pieces) would be valuable. (It is planned that the developers will still gain input here through user panels and sampling as product development progresses.)

Selecting and Specifying Computer-Enhanced Units

Market(s)

The results of the survey would indicate the existence of a number of sizeable markets (or user audiences) for Selecting. Primary audiences will be

1. professors of teacher education (undergraduate/graduate levels)
2. practicing teachers of social studies (secondary)
3. practicing teachers of mathematics (intermediate and secondary)
4. practicing teachers of science (intermediate and secondary)
5. superintendents of large school districts (elementary and secondary levels).

Secondary markets (user audiences) for Selecting are identified as

1. superintendents of medium and small school districts
2. practicing teachers of vocational education (secondary)
3. practicing teachers of social studies (intermediate)
4. practicing teachers of business education
5. practicing elementary level teachers in general
6. users in private industry.

On the whole, professors of teacher education are very strong in their belief that classroom teachers should understand the computer and be able to use it in instruction. They rate this need especially high among both intermediate (61.4 percent) and secondary (76.4 percent) teachers. More specifically, professors want their teachers-to-be to be computer-competent especially in the teaching areas of social studies, science, mathematics, and vocational education. The high rate of return (44 percent) among the sample surveyed is quite positive showing a particularly strong commitment to computer training and skill. In fact, nearly 86 percent feel the computer will receive increased emphasis from their institution over the next five years (in training).

There appears to be a strong case for exploring market potential among all primary audiences, based solely on their perception of the lack of quality in available training materials. Only 2 percent of the responding professors of teacher education are familiar with computer training materials and find them satisfactory; among school district superintendents, only 7 percent of the respondents are satisfied; among practicing intermediate/secondary teachers, only 2 percent of the respondents are satisfied. There is an obvious need and desire among these identified markets for quality materials.

The superintendents express a strong commitment to training for their practicing teachers. Three fourths of them will offer inservice for teachers, assuming economical and efficient training materials are available. And most positive here is the acknowledgement by practicing teachers that they (72 percent) would find it useful to receive more training in computer applications.

All in all, the potential markets for Selecting tend to cross subject lines among practicing teachers more than originally expected. Computer usage in classroom instruction is very strong among vocational education and business education teachers. It is conceivable that more audiences exist than were tested. Additional research would seem prudent then to seek out these users for Selecting.

Product Mix

The currently planned mix of instructional materials within Selecting and Specifying Computer-Enhanced Units appears to be well in line with those areas desired for training by the audiences surveyed. Needs in simulation and problem solving in instruction rate high (64 percent) with practicing teachers. Professors of teacher education say that secondary teachers need to understand the role of the computer in our society (76.4 percent), 61.4 percent feel similarly for intermediate teachers and 47 percent feel this way about elementary teachers. The ability among practicing teachers to use the computer (according to professors of teacher education) is rated high as well.

Of the five topics covered in Selecting, the ability to use programs for simulation and problem solving rates much higher than all others. This trend holds, whether the respondents be professors of teacher education, school district superintendents or practicing teachers. This kind of strength has positive marketing implications, as that one unit will probably "pull" the other four units into greater purchase and use. Accordingly, the availability of training materials in computer simulation and problem solving should lead in promotional messages, thereby drawing attention to it and all units within Selecting.

Based on known usage patterns by the various markets for Selecting, it is anticipated that the pieces of the product mix will be formatted into one bound document, probably designed in manual style for ease of use and production economies. It is to be softbound, in a size (8 1/2" x 11" probably) common to such products. As stated in the Data Management section, five separately bound pieces does not appear to be the best production and usage approach.

Program listings, CRIMEX, and an instructor supplement will be available for teacher and student use. Final design of these is yet to be decided.

Communication

Promotional strategies to be conducted by the publisher of Selecting and Specifying Computer-Enhanced Units to communicate the availability of the product will 1) build awareness of and commitment to the product, and 2) achieve final purchase and use.

Direct mail appears to have strong potential for success as a promotional and sales vehicle. Such opinion is expressed due to 1) high (20 percent plus) return from the sample surveyed, and 2) the Laboratory's extensive past experience in using direct mail. In the case of Selecting, targeting will be on identified probable user audiences and linkage agencies. The high majority of respondents to the survey indicated a desire to be kept informed on product development. This in itself implies commitment. Accordingly, this majority will form the foundation for launching an initial mail campaign when promotion starts.

Direct mail will be supplemented by the following strategies:

- Preparation of descriptive product/program literature for use as handouts, direct mail and for display
- Submission of product press releases to journals, associations, through existing education and non-education networks.
- Submission of articles for publication in targeted user-read professional journals and newsletters.
- Conference participation to exhibit products (such as at NAUCAL Conference, Portland, Oregon, in October 1976).
- Placement of print ads in targeted user-read publications (local and national professional journals and newsletters)
- Exposure on educational television and radio.
- ERIC (Educational Resources Information Center)

The Laboratory as publisher will have the advantage of "piggybacking" on other Laboratory Computer Technology products in the process of promoting Selecting. This is certainly true with Data Management. It is also true when promoting a Laboratory developed, Prentice-Hall published secondary supplementary book entitled Elements of Computer Careers. As the Laboratory promotes one in its line of computer products, it has the opportunity to also focus on all products. This promotion extention capability is advantageous both from an image and economic point-of-view.

Distribution Mix

The Laboratory, as intended publisher of Selecting and Specifying Computer-Enhanced Units, will perform all the selling and dissemination tasks

(including product packaging and formatting, promotion, pricing, receiving and processing of orders, shipping of products, and accounting needs).

Selecting, based on survey input, will receive wide use among both student teachers and practicing teachers. Training will be both preservice and inservice. Inservice for practicing teachers currently receives little attention on the college campus, at least through the education department. This means all those interested teachers probably will receive desired computer training through either another college department or within their own school district. The majority of teachers (56 percent) would prefer inservice within their district or through a local program anyway.

The timing for such teacher inservice training appears to be evenly split across all seasons, according to school district superintendents. However, teachers would prefer such training during the school year (54 percent). And as with Data Management, a skilled trainer is important to the continuing success of Selecting. Promotional/sales messages must relate recommended trainer skill levels to probable buyers/users.

User access to computer terminals appears high among the audiences surveyed, thus implying a high expectation for product interest and purchase. Sixty-six percent of the responding professors of teacher education report that their students have at least some reasonable opportunity to work on computer terminals. Sixty-seven percent of superintendents indicate that their district teachers would--if provided--receive their computer training within the school district. And 46 percent of the responding practicing teachers report some accessibility to a computer terminal for instructional use.

Availability of or commitment to spending computer training monies appears relatively strong. Eighteen percent of the school district superintendents report that, if the district budgeted monies for training, $75 to $150 per teacher would be available annually. Eight percent report a commitment of more than $150. And while 44 percent of the respondents indicate a willingness to spend no more than $75 per teacher's training, this in itself implies a commitment to some level of inservice instruction for their practicing teachers. Only 18 percent of the respondents indicated no commitment, again implying a concern by over 80 percent of the sample for the acquiring of computer skills by their teachers.

Limitations of Present Data

As with Data Management, time must be considered as presenting several limitations to this present study of Selecting. The survey was conducted under a rigid timeline. Limited planning, preparation, execution and data reduction time was available.

While the results of the survey are now viewed as being most productive and helpful, it is proper to recognize that additional time in all areas might have provided findings, not to refute our current marketing information, but rather to provide more useful data.

Special concern existed relative to the time of the year for the survey, especially with regard to reaching teachers. The survey instruments were sent out in early July, right in the middle of summer vacations for a great majority of the intended respondents. While the teacher questionnaires were mailed to teacher homes rather than school buildings, one must speculate that

the 13.9 percent response (lowest of all groups surveyed) would still have been higher during the school year. This opinion must also be expressed for all groups, as the Laboratory has received a high number of questionnaires from respondents after the cut off date, many carrying expressions of apology for not responding sooner because of vacations and other time-related reasons.

Audience is viewed in retrospect as a limitation to useful indepth data. While those target user audiences surveyed were and are still preceived to be the prime market for Selecting and Specifying Computer-Enhanced Units, it would also have been useful to survey a number of other potential users. For example, input from less-than-large school districts, libraries, private industry, elementary teachers, perhaps other specific subject-related intermediate and secondary departments and governmental agencies would have provided additional direction relative to marketing the product to those groups. Also an evaluation of the perceived linkage agencies would have been valuable.

A more indepth evaluation of regional aspects of the marketing and use of the package might have been helpful. One can speculate that certain trends may exist, perhaps from state to state as well as within states, that would give direction relative to the interest in and need for such materials. However, a preliminary investigation produced no significant trends and no useful data from a marketing perspective. Therefore this national survey must stand as respresentative of respondent input on a total nationwide basis.

The availability of product design input would have been helpful from a developmental point of view. It was considered, at the time of questionnaire design to probe in the area of desired product formatting. However, in the

interest of conserving space, this was eliminated. This was, in retrospect, a proper decision. However, user input on desired product design of Selecting (for example, one bound piece versus five separate pieces) would be valuable. (It is planned that the developers will still gain input here through user panels and sampling as product development progresses.)

Final Opinion

Considering the positive nature of all data collected relative to Data Management and Decision Making and Selecting and Specifying Computer-Enhanced Units, it seems reasonable to conclude that

1. Sizeable user audiences currently exist for such products as Data Management and Decision Making and Selecting and Specifying Computer-Enhanced Units
2. These audiences want, will purchase and use Data Management and Decision Making and Selecting and Specifying Computer-Enhanced Units
3. These products will be of a quality satisfactory to the audiences
4. The audiences are reachable in terms of communicating the availability of these products to them.

All such conclusions then weigh heavily in favor of publishing Data Management and Decision Making and Selecting and Specifying Computer-Enhanced Units once development is completed.

APPENDIX A: QUESTIONNAIRE COVER LETTERS

Northwest
Regional
Educational
Laboratory

710 S.W. Second Avenue • Portland, Oregon 97204 • Telephone (503) 248-6800

July 9, 1976

Dear Colleague:

The Laboratory is developing materials for training businessmen and women and business administration students to use computers for various management and decision making tasks. You have been selected to assist in determining the potential value and need which professors of business administration see for such materials.

We would appreciate it if you or an appropriate staff member would complete the enclosed questionnaire to provide us with information to guide further work in creating appropriate training materials which have a high potential for being used. The Laboratory is carrying out this work under a contract with the National Institute of Education.

Because of the short time available to us for this study, your quick response will be most valuable. A postage-paid return envelope is included. Upon request, we would be happy to send you a copy of the survey results.

Thank you for your help.

Sincerely,

Lawrence D. Fish

Lawrence D. Fish
Executive Director

LDF:cc

Encl. - 1

Northwest
Regional
Educational
Laboratory

710 S.W. Second Avenue • Portland, Oregon 97204 • Telephone (503) 248-6800

July 9, 1976

Dear Colleague:

The Laboratory is developing materials for training practicing school administrators and educational administration students to use computers for various school management and decision making tasks. You have been selected to assist in determining the potential value and need for such materials in educational administration courses.

We would appreciate it if you or an appropriate staff member would complete the enclosed questionnaire to provide us with information to guide further work in creating appropriate training materials which have a high potential for being used. The Laboratory is carrying out this work under a contract with the National Institute of Education.

Because of the short time available to us for this study, your quick response will be most valuable. A postage-paid return envelope is included. Upon request, we would be happy to send you a copy of the survey results.

Thank you for your help.

Sincerely,

Lawrence D. Fish

Lawrence D. Fish
Executive Director

LDF:cc

Encl. - 1

Northwest
Regional
Educational
Laboratory

710 S.W. Second Avenue • Portland, Oregon 97204 • Telephone (503) 248-6800

July 9, 1976

Dear Colleague:

The Laboratory is developing materials for training teachers and administrators to use computers for various administrative tasks and as an aid to instruction. You have been selected to assist in determining the potential value and need which superintendents see for such materials.

We would appreciate it if you or an appropriate staff member would complete the enclosed questionnaire to provide us with information to guide further work in creating appropriate training materials which have a high potential for being used. The Laboratory is carrying out this work under a contract with the National Institute of Education.

Because of the short time available to us for this study, your quick response will be most valuable. A postage-paid return envelope is included. Upon request, we would be happy to send you a copy of the survey results.

Thank you for your help.

Sincerely,

Lawrence D. Fish

Lawrence D. Fish
Executive Director

LDF:cc

Encl. - 1

Northwest Regional Educational Laboratory
710 S.W. Second Avenue • Portland, Oregon 97204 • Telephone (503) 248-6800

July 9, 1976

Dear Colleague:

The Laboratory is developing materials for training teachers and students in teacher education to use computers as an aid to instruction. You have been selected to assist in determining the potential value and need for such materials for preservice and inservice courses.

We would appreciate it if you or an appropriate staff member would complete the enclosed questionnaire to provide us with information to guide further work in creating appropriate training materials which have a high potential for being used. The Laboratory is carrying out this work under a contract with the National Institute of Education.

Because of the short time available to us for this study, your quick response will be most valuable. A postage-paid return envelope is included. Upon request, we would be happy to send you a copy of the survey results.

Thank you for your help.

Sincerely,

Lawrence D. Fish
Executive Director

LDF:cc

Encl. - 1

Northwest
Regional
Educational
Laboratory

710 S.W. Second Avenue • Portland, Oregon 97204 • Telephone (503) 248-6800

July 9, 1976

Dear Colleague:

The Laboratory is developing materials for training teachers and students in teacher education to use computers as an aid to instruction. You have been selected to assist in determining the potential value and need which selected educators across the country see for such materials.

We would appreciate it if you or an appropriate staff member would complete the enclosed questionnaire to provide us with information to guide further work in creating appropriate training materials which have a high potential for being used. The Laboratory is carrying out this work under a contract with the National Institute of Education.

Because of the short time available to us for this study, your quick response will be most valuable. A postage-paid return envelope is included. Upon request, we would be happy to send you a copy of the survey results.

Thank you for your help.

Sincerely,

Lawrence D. Fish

Lawrence D. Fish
Executive Director

LDF:cc

Encl. - 1

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APPENDIX B: LETTER FROM RESPONDENTS AND REPRESENTATIVE COMMENTS

NORTH CAROLINA STATE UNIVERSITY | AT RALEIGH

SCHOOL OF EDUCATION

DEPARTMENT OF
CURRICULUM AND INSTRUCTION
402 POE HALL 27607
PHONE: (919) 737-3221

July 16, 1976 - -

Office of Marketing and Dissemination
Northwest Regional Educational Laboratory
710 S. W. Second Avenue
Portland, Oregon 97204

Dear Sir:

Enclosed you will find your completed questionnaire and I would definitely like to receive a copy of the survey results. It is my firm belief that materials such as those you have developed and are developing are definitely needed.

I am chairman of a Curriculum Advisory Committee for Education for CONDUIT, a NSF supported project, whose purpose is to facilitate use of instructional computing at the collegiate level. Our committee is currently completing a nationwide survey of schools and departments of education to identify levels of computer use and specific materials and applications. The purpose of this survey is to produce a "State of the Art" report for the education discipline. This report will include the results of the survey of use and specific applications, a listing of identified materials, a bibliography of relevant literature and a listing of projects engaged in the production and sources of computer-based materials designed to aid in preparation of professional educators.

The purpose of this letter is to request a list of the materials that you currently have available and are developing for inclusion in our report. Also to notify you that we will be including the Laboratory in our list of current projects.

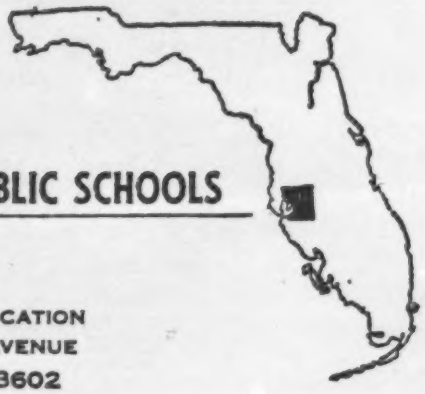
I look forward to receiving the results of your survey. If there is any additional way that I can be of assistance to you and your efforts please feel free to contact me.

Cordially,

David R. Kniefel
Assistant Professor

DRK:bab

Enclosure



HILLSBOROUGH COUNTY PUBLIC SCHOOLS

DEPARTMENT
OF
EXCEPTIONAL CHILD EDUCATION
411 EAST HENDERSON AVENUE
TAMPA, FLORIDA 33602

SUPERINTENDENT OF SCHOOLS
RAYMOND O. SHELTON

JACK R. LAMB
DIRECTOR

August 4, 1976

Mr. Lawrence D. Fish
Executive Director
Northwest Regional Educational Laboratory
710 S.W. Second Avenue
Portland, Oregon 97204

Dear Mr. Fish:

I have received your letter of July 9, 1976 and the attached "Survey of School District Superintendents."

Our school district has a very comprehensive in-service training program and we do utilize computers for various administrative tasks and as an aid to instruction.

Sincerely,

Paul E. Rich, Supervisor
Programs for the Socially Maladjusted

PER/lrc

PANHANDLE STATE UNIVERSITY GOODWELL, OKLAHOMA 73939

July 21, 1976

Dr. Lawrence D. Fish
Executive Director,
Northwest Regional Educational Laboratory
710 S.W. Second Avenue
Portland, Oregon 97204

Dear Dr. Fish:

The Survey of Professors of Teacher Education on the use of the computers in instruction in the schools has been completed for this institution and is enclosed.

I strongly believe that the use of computers as an instructional tool should be expended in all areas of education. I feel very frustrated because I am associated with an institution whose resources are very limited and a very low priority is established for computer use in all areas of instruction and administration.

Sincerely yours,

Royal H. Bowers

Royal H. Bowers
Dean of Instruction

RHB:dm

Monterey Peninsula Unified School District

POST OFFICE BOX 1031 MONTEREY, CALIFORNIA 93940 (408) 649-7011

JAMES C. HARRISON, Superintendent

BOARD OF EDUCATION

Lonnie G. Ayers
Linda Lee Bassett
Ted Cunningham
G. Gervaise Davis III
Sam Karas
Thomas Knauf
Mary Lou Stutsman

July 27, 1976

Mr. Lawrence D. Fish, Executive Director
Northwest Regional Educational Laboratory
710 S. W. Second Avenue
Portland, Oregon 97204

Dear Mr. Fish:

I was very interested in your survey regarding the possible application of data processing to a school district. We are presently very active in both management and instructional use of computers. We would be very eager to work with you in further application of this technology.

I look forward to hearing from you.

Sincerely,

James C. Harrison

James C. Harrison
Superintendent

JCH/gm

Saint Augustine's College
Raleigh, North Carolina 27611

OFFICE OF VICE PRESIDENT
ACADEMIC AFFAIRS

July 16, 1976

Dr. Lawrence D. Fish
Executive Director
Northwest Regional Educational
Laboratory
710 South West Second Avenue
Portland, Oregon 97204

Dear Dr. Fish:

I am pleased to inform you that the "Survey of Professors of Teacher Education" has been referred to Dr. Lawrence Thompson, Chairman, Division of Education. As an appropriate staff member, I am certain that he will complete the questionnaire that will provide you with the requested information.

Upon completion of the study, will you send us a copy of the survey results?

Sincerely,

Thelma Roundtree
Vice President for Academic Affairs

TR/ws

cc: Dr. Lawrence Thompson, Chairman, Division of Education

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N. W. R. E. L.
EXEC. DIRECTOR'S OFFICE

SELECTED COMMENTS FROM USER AUDIENCES SURVEYED

Virtually all the college personnel, most school superintendents and about half the teachers signed their names and addresses to the otherwise anonymous questionnaire indicating their desire to be kept informed about the computer training materials when they become available.

Many of each group also added comments; favorable, almost without exception. Following are representative remarks:

Professors of Educational Administration

A timely study.

--Harvard Graduate School of Education

Would be useful in the courses in Educational Planning and Futurism that I teach.

--Eastern Michigan University

It is most important to have materials in this area which are aimed at the educational administrator and which first answer his question of why he needs to know about computer topics and then what. I recommend hands-on use.

--Temple University

I am familiar with courses developed by the Northwest Laboratory. We need a demonstration system to go with them.

--University of Nebraska

We are a relatively new institution and need to become more involved in this area.

--Auburn University, Montgomery

We would be most interested in testing this material.

--Monmouth College, New Jersey

I see great potential for the computer in decision making.

--Loras College, Iowa

I will be delighted to test this material. Please contact me when it is ready.

--University of Tennessee

Computers are vital tools in administration, and I would like to see more materials developed in this area.

--University of Washington

We are using your material on a limited basis and will use it full time when it is printed.

--Northern Arizona University

Professors of Teacher Education

Please send further information when it is ready.

--Providence College, Rhode Island

There is no doubt in my mind that we are going to see major shifts in the Directed Teaching arrangement within the next ten years. This is an area where computer-assisted instruction can be in the forefront.

--Western Michigan University

When will these courses be ready?

--College of Education, University of Idaho

Many institutions need information and training on the availability and usage of the computer.

--Pacific College, California

We will install a new university computer and have terminals available for student use this fall. We will be able to include it in our courses.

--Lamar University, Texas

We are purchasing terminals this summer.

--Idaho

I am most interested in any materials that you develop along this line.

--Appalachian State University, North Carolina

Professors of Business Administration

We have just begun an O/R program in our mathematics department. We expect this to grow over the years.

--St. Ambrose College, Iowa

I would like to have information on the development results and also on the materials.

--University of Alabama

The importance of the computer will increase very much over the next five years. I hope it comes with more applications.

--Duke University, Durham, North Carolina

Superintendents of Schools:

I would appreciate a phone call when the materials are ready.

--St. Paul, Minnesota

Software for computers should have a big demand here in two years.

--Castro Valley, California

We have computer-assisted instruction at both elementary and secondary levels.

--Houston, Texas

We need training of staff to use the computer and would purchase appropriate developed material at a cost we can afford.

--Travis, California

We just installed a computer and hope to use it for instruction.

--California

A computer is being installed for business and education use.

--Lansing, Michigan

Teachers

Will there be any pilot programs up in my area? If so, I am very interested.

--Vicksburg, Mississippi

Use of computers in secondary schools is coming about at too slow a pace.

--Garland, Pennsylvania

We are behind the times in the instructional use of computers. I would be most interested in the materials.

--South Carolina

I would be very interested in inservice training.

--Ansonia, Ohio

I would appreciate any material that would help junior high school students become acquainted with computers.

--Memphis, Tennessee